

COAL AGE

Vol. 12

NEW YORK, DECEMBER 15, 1917

No. 24

Over the Top

TO THE MEN IN THE MINES OF AMERICA:

Do you think you have to travel to the battle front in France to go "Over the Top"? Well, you don't.

Wherever you are, and whatever your job, "No Man's Land" is in front of you; and you can go "Over the Top" whenever you make up your mind to do it.

Perhaps you think that going "Over the Top" is a synonym of triumph and victory. If you do, you are mistaken.

Going "Over the Top" means STARTING for triumph

It means to come out from under the shelters and start across "No Man's Land" for the goal of victory. It means coming out of the trenches of indolence, selfishness, despondency and what-not and starting in dead earnest for the goal of your ambition.

Are you a Coal Miner?

Then go "Over the Top" for your maximum individual production. Today every red-blooded American coal miner who is not working every day he has the chance is cringing on the firing-step of his battle trench, when he should be "Over the Top" and bending every energy to produce all the coal he can.

Remember, you miners of America! Italy was beaten back for lack of coal; for big guns and big shells are only another and more finished form of coal. And now, for all you know, there may be American boys in the Italian trenches. Can you refuse to go "Over the Top" with your own blood and kin?

Are you a Mine Manager or Superintendent?

Go "Over the Top" for every ton of coal your mine can produce. Remember, the energy represented by the heat units in your product is finally

landed plumb in the hands of the fighting men at the front. For you, "Over the Top" means the ultimate giving of your brain power and physical energy for the aid of your country.

Think it over tonight. Maybe your plant is still in the trenches as far as its very best is concerned. What you can do to carry it "Over the Top" tomorrow may be determined for you in the still watches. And while you are pondering the problem, let one ear listen to the cries of your own conscience. It's easier to be a coward at home than "Over There," where so many eyes are upon you.

OVER THE TOP! What a world of significance in those three little words for us mining men. The coal mines of these United States are the very shoulders of Atlas. Without the coal of America, German frightfulness would no doubt rule this world.

This will never happen, but to thwart its purpose most quickly, every mining man in America must come out from behind whatever shelter he is under and go "Over the Top" for victory. If we don't do our part, we must not complain should the Government assume control of our coal properties.

Don't Forget!

You are not really in the game—no matter what your place—until you start with every nerve a-tingle for the goal across "No Man's Land." As long as you stay in the trenches of individuality and disregard for country, or for any other reason fail to give your best, you have not caught the meaning and the mastery of "Over the Top."

Mining Men of America, let's go "Over the Top" for the sake of the boys in France. Miner! Dig an extra ton tomorrow—the company can start a stockpile if it can't get cars. Mine clerk and dayman! Resolve to work an extra hour at your job for your country's sake. Manager! Give more of your night hours to thinking and planning.

*Let's all go "Over the Top" together
for AMERICA.*

Ideas and Suggestions

Homemade Trolley Supports

BY R. Z. VIRGIN

Wheeling Steel and Iron Co., Wheeling, W. Va.

The accompanying illustrations show some homemade supports for trolley lines and light wires that are of a permanent nature. Such supports should be made of pipe and painted yearly, and they will be found of practical utility if the dimensions suggested are adopted and the method of installation followed.

Fig. 1 shows a span of 22 ft. carrying three trolley lines over three tracks of 3-ft. 6-in. gage, the top pipe being 2 in. in diameter. The short pieces of 2 in. pipe are cut at variable lengths to suit conditions at the place where the supports are erected.

The spans are fitted loosely into a piece of 4-in. pipe and then fastened by wooden wedges, being thus held

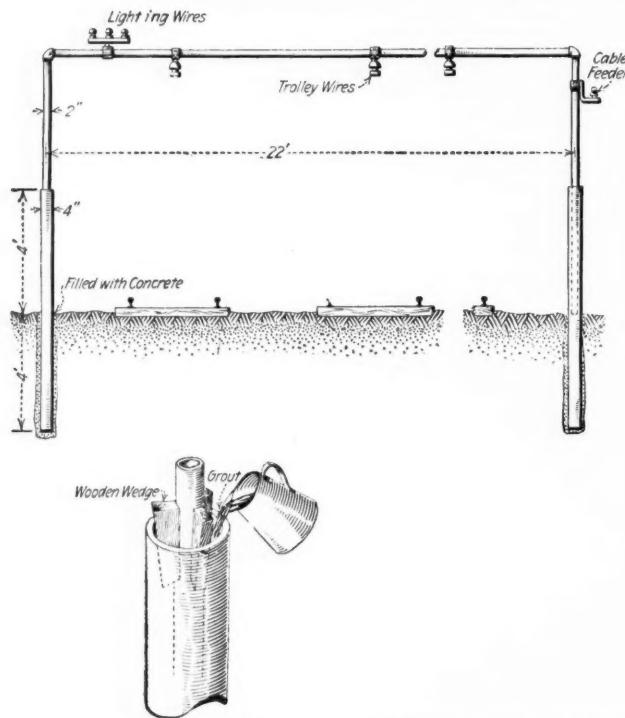


FIG. 1. SPAN CARRYING TROLLEY LINES OVER TRACKS

in place until they are cement grouted. These supports, if properly erected and placed 30 ft. apart along the tracks, will not sag in the center when carrying three lines.

The mine cable can be attached to the side, so as to prevent too much top weight, and clips can be placed on top to carry the small lighting wires. The 4-in. pipes are cut in lengths of about 8 ft., being placed 4 ft. in the ground and grouted.

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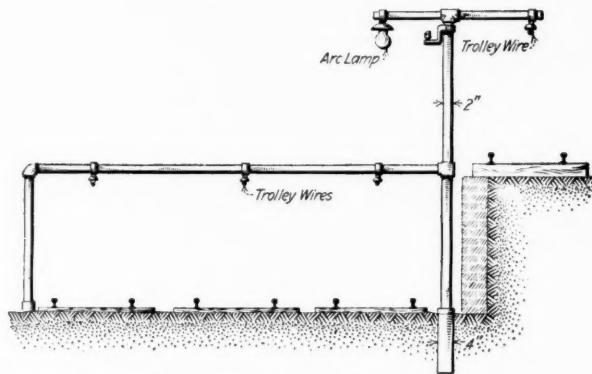


FIG. 2. PIPE SUPPORT TO COVER TRACKS

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Arms may be attached to these vertical supports by the means of reducing fittings. On these arms may be hung arc lamps for lighting the yards.

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Work and liquor are as oil and water—they will not mix, though more than one misguided individual has literally burned up his energies in the effort to combine both.

The Need of Economy and Saving

When we put a million and a half soldiers in the field, we withdraw those men from productive enterprises. They do not while they are actually in training or in service produce anything. They do, on the other hand, consume much. There is nothing more expensive on earth than to support and maintain a great army in the field, especially if it is on the fighting line. The attrition of supplies and everything else is tremendously great when we have a fighting army in the field.

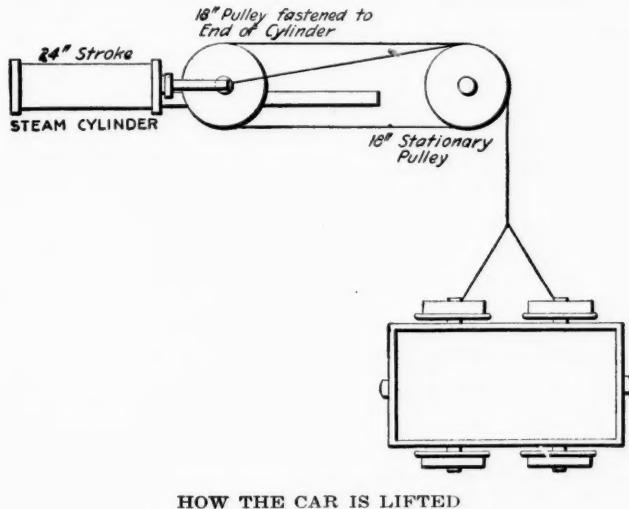
America is the one great remaining storehouse in the world of supplies and credit. We must maintain and make as effective as possible our own soldiers and the soldiers of those nations who are fighting for us. We must therefore draw as little as possible upon our common store of supplies and money. The more we lessen our domestic demand, the more we can contribute to the support and effectiveness of our allied armies.

Economy is now a national duty, such a duty upon the people at home as fighting is upon those Americans who are bravely offering their lives for the honor of America and the preservation of liberty and justice.

Car Lifter for Mine Car Shop

In the car shop of one of the large anthracite coal mines near Wilkes-Barre, Penn., is a car lifter, or turner, that can be made in any mine blacksmith shop.

This car lifter is made from an old steam cylinder 10 in. in diameter and having a stroke of 24 in. To the end of the piston rod is connected a double-groove



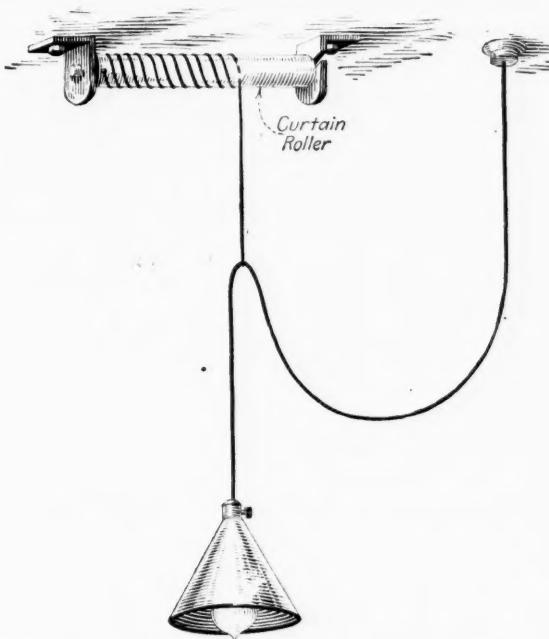
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There are two steam pipes from the main steam line, one to each inlet valve of the cylinder. In each of these steam pipes is a throttle valve. This is so arranged that when it opens the exhaust outlet on the opposite end of the cylinder is automatically opened.

Valves are placed about 5 ft. above the floor. To turn the car over on its side it is only necessary to hook the chain to the wheels or the axles and open the proper throttle valve. This forces the piston to the rear of the steam cylinder, lengthening the distance between the sheave wheels and thus raising the car. To lower the car the operation is reversed.

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OLD WINDOW-SHADE ROLLER AS LAMP ADJUSTER

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Conditions in each mine are being made better each year, and one of the best methods and the cheapest way of doing this is to find out what the men are most in need of. This can be done by putting near the entrance to the mine a suggestion box.

The box could be made of any size and should be weatherproof. Have a card printed in the languages of the different employees, telling of the suggestion box and what it is meant to do. Offer a prize of some value to the one making the best suggestion in any month, and have a little meeting of all the men to award the prize and to read and discuss the different suggestions.

Information and conditions that the foreman or superintendent has never dreamed of will come out in each opening of the box. A list of the best suggestions will help all the men in the mine. At every mine the conditions are different, and by using the opinions of the men it will not be long before the mine is made better in every way.

Squeeze in the Maxwell Shaft

BY D. C. ASHMEAD

Tarrytown, N. Y.

SYNOPSIS—The south wall of the shaft pushed in as much as 5 ft., breaking the timbers and making it necessary to cease operations. Concrete walls and buntons were used to prevent the squeeze from spreading. All cavities were filled with concrete and the fissures were well grouted. Methods of handling timbers and supporting wall are described.

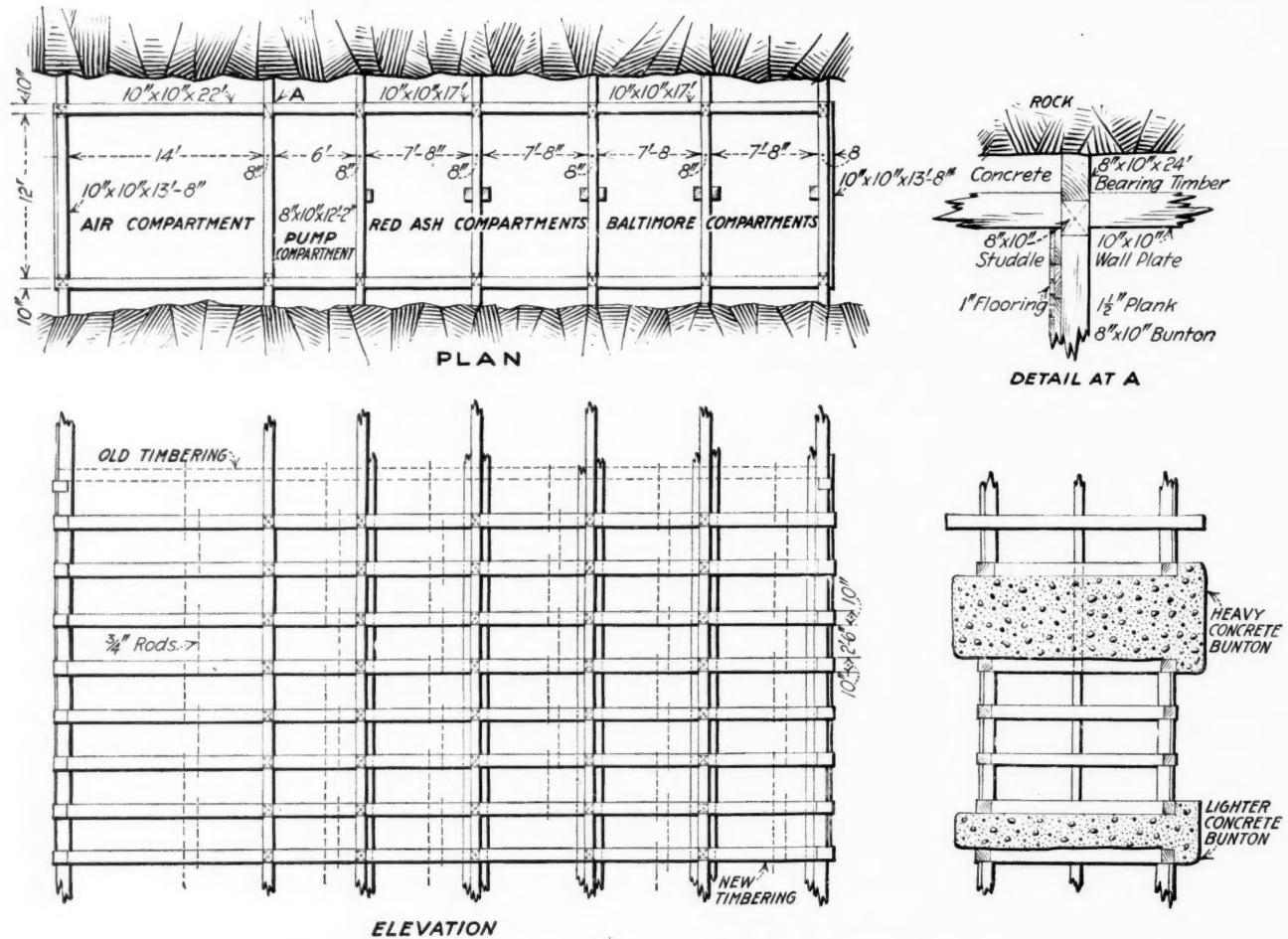
ON APR. 20, 1917, the south wall of the hoisting shaft at the Maxwell No. 20 colliery at Wilkes-Barre, Penn., the property of the Lehigh & Wilkes-Barre Coal Co., pushed out of place 5 ft., crushing the shaft timber. Some of the timbers were displaced as much as 19 deg., and many of them were broken in two. For some time previous, it had been noticed that the south wall was working, but the company had delayed fixing it for various reasons. On Apr. 20, however, it had moved so much that it was impossible to bring two of the hoisting cages to the surface.

The shaft has six compartments and measures 56 ft.

by 13 ft. 8 in. It has an airway 14 ft. wide, pump compartment 6 ft. wide, two hoisting compartments each 7 ft. 8 in. wide, which go down to the Red Ash bed, 1022.05 ft. below the surface, and two other hoisting compartments each 7 ft. 8 in. wide which extend only to the Baltimore bed, which is 652.90 ft. from the shaft collar.

The squeeze started just below the Hillman bed, 210 ft. from the surface, and extended down in the south wall of the shaft for a distance of 200 ft. Just below the Hillman bed this trouble is in evidence 10 ft. back from the shaft wall, and at this point there was a fissure 2½ ft. wide.

At the bottom of the squeeze a reinforced-concrete wall was placed on the south side of the shaft. Spanning the shaft from this wall to the solid rock on the north side, reinforced-concrete buntons were erected. The load on these buntons was further sustained by additional 8-in. buntons, as shown in the right-hand lower corner of the illustration. Three sets of these walls and buntons were placed in position, one above the other, and a space was left between the sets equivalent to one set of timbers. Concrete in the proportions of 3:4:5, reinforced with 1-in. twisted steel bars, was



PLAN OF RECONSTRUCTED TIMBERING IN THE MAXWELL SHAFT

used for the buntons and walls, also in all other places where it was found necessary to use concrete in strengthening the shaft.

As soon as the weight had settled on the buntons and walls, all the cavities on the south side of the shaft were filled with concrete. In all there were six of these cavities. When the concrete had fully set, the opening at the top of the fissure was cleaned out and 2000 bags of pure cement grout poured in, and on top of this 2000 bags of cement mixed with a like amount of sand. Thus the fissure was filled to the Hillman bed. The grout was sent down from the surface to the working place through a 6-in. steel pipe and was allowed to set thoroughly before the work was continued.

The next step was to shore up the loose rock in the shaft, and to that end two lines of shoring, of 8 x 8-in. yellow pine, were put in each compartment. These braces were placed about 4 ft. apart. Work was then started at the top of the squeeze to remove the rock, which had pushed out of place as much as 5 ft. in some places. Temporary working floors were placed, and the rock and broken timbers were loaded into buckets and hoisted to the surface.

When the rock was excavated the timbering was started. The wall plates are 10 x 10 in., the studdles and buntons being 8 x 10 in. All the timber, which is of yellow pine, is being framed on the surface before being sent down. The outside of the shaft timbers is being covered with 2-in. plank. The airway is lined first with 1½-in. plank and then covered with 1-in. flooring, which makes it completely air-tight.

NEW TIMBERS SUPPORTED ON LONG IRON RODS

The first set of new timbers, although started at the end of the old sets of timbers, was also supported from each wooden bunton by two 1-in. iron rods 40 ft. long, which were fastened to the old timbers above. Iron washers 1½ x 3 x 11 in. were laid across the old timbers, iron rods being passed through holes in these washers and fastened with a nut. At the lower end of the rods was a similar washer, which went under the new buntons, allowing them to hang on the rods. The ends of the rods were threaded for about 6 in., and this permitted their adjustment to the correct length, so that they would assume their proper amount of load.

It was proposed to use bearing timbers every 20 ft. These were to be 8 x 10 in. by 24 ft. It was later decided, however, after using one set, that they were not sufficiently strong, and to secure the requisite strength in another way concrete buntons were introduced. The new sets of timber, of which there are now 33 in place, are hung on 3½-ft. centers, each set of timber being suspended from the one above by 1-in. iron rods.

The smaller concrete buntons, which are well shown in the lower part of the diagram, in the lower left-hand corner of the illustration, are 2½ ft. wide and 8 in. thick, and extend from the solid rock wall on the north side of the shaft to the south side. The ends of the buntons on the south side of the shaft are made so that the top end curves up and the other down over the ends of the wooden buntons immediately above and below. Between the ends of the buntons and the south wall of the shaft the space is filled in with con-

crete. This "concrete ring," as it is called, is never less than 12 in. thick, and may be 3 or 4 ft., depending on the amount of space between the timbering and the wall of the shaft. If the space is less than 1 ft., a sufficient quantity of rock is excavated to get the proper thickness.

The concrete buntons now being installed are made half the width of the first buntons, as shown in the right-hand corner of the accompanying illustration, the change being decided on because it was found that the south wall was in excellent condition. For this reason, it was decided to suspend as much of the weight of the shaft timbering on the buntons as possible, as there might not again be found such a favorable condition. The concrete filling, or rings, act both to hold back the loose rock and as bearings for the buntons.

The Lehigh & Wilkes-Barre Coal Co. expects to have this shaft in operation by the first of the new year. The closing down of the shaft has cut the output of the mine more than half, all the coal now being hauled a roundabout way underground and brought to the surface by slopes.

Open Grate Fires Wasteful

BY VAN. H. MANNING

Director of the Bureau of Mines, Department of the Interior

The chilly days of autumn call attention to the proper use of the grate fire by those who will try to help the country save coal. When the need of using fuel economically is as strong as it is now, we can say, twisting our words a bit, that the proper way to use the grate is to use it not at all. If we look at the open grate as merely a heating device, and know how small a proportion of the total heat in the fuel enters the room to be warmed, we must regard the open grate as probably the most inefficient of all the inefficient devices used in heating a house. The cheer and companionship of an open-grate fire must not be charged against the heating bill, but to some other account.

Efficiency is always a ratio or fraction, and is what you get out compared with what you put in. Into the grate one puts fuel that has the ability to produce a large amount of heat, but the useful heat obtained from this fuel is relatively small. Most of the heat in the fuel goes racing up the chimney, in company with a large amount of air from the room, this air being replaced by cold air drawn in through cracks and crannies in the windward side of the house. As a device for drawing in cold air a grate is excellent, but it furnishes much more ventilation than is needed. Much less fuel, properly burned in a stove, would warm the house better.

The grate fire is such a cheerful, lively member of the household on chilly mornings and evenings, that it is loved in spite of its spendthrift ways. The present fuel situation, however, suggests that the grate should be filled with coal much less often than in the past. It should be used when only a little heat is needed for a short time. It should be fed on waste wood as much as possible. The flickering flames of a smaller fire may be made sufficient to excite the fancy rather than the scorch and the big roar of too full a fireplace. When steady heat is needed, economy suggests doing without the cheer and running the more sedate stove.

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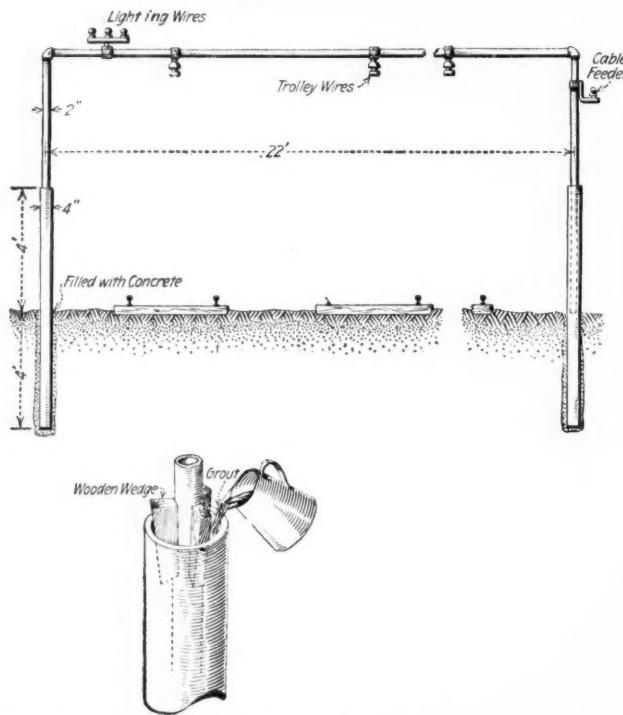


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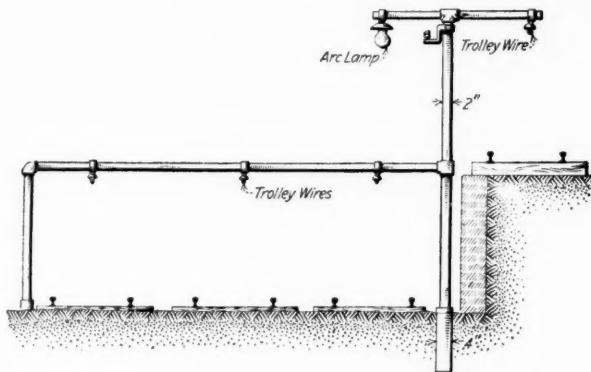


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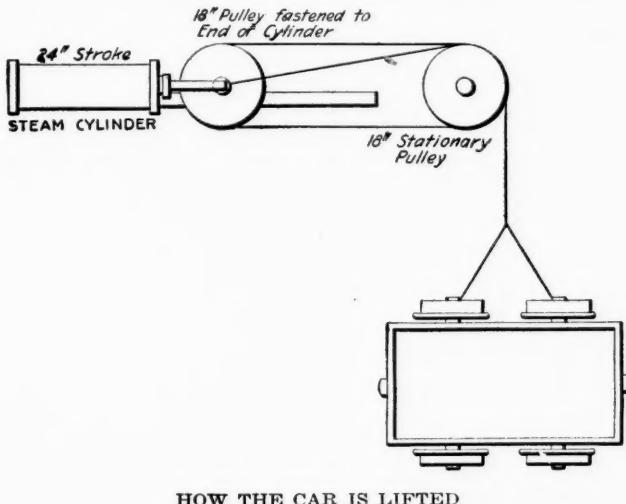
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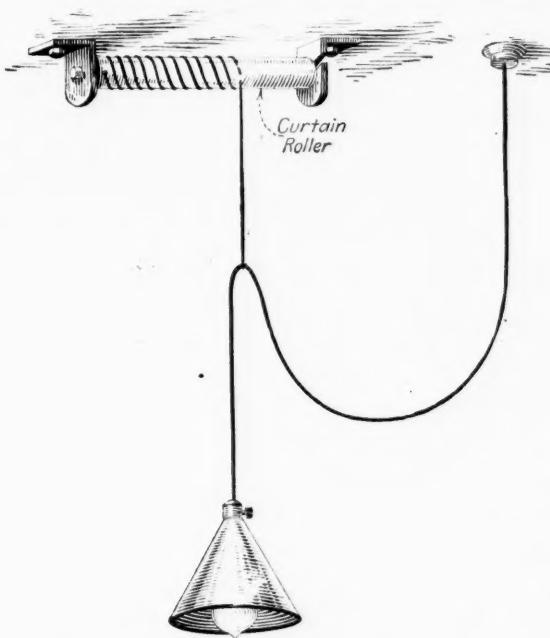
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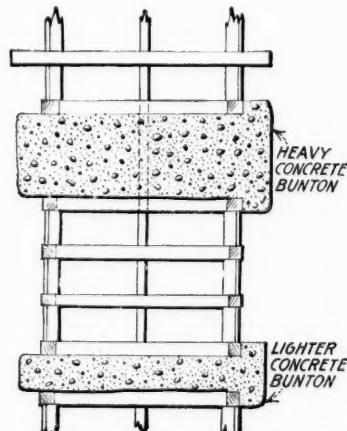
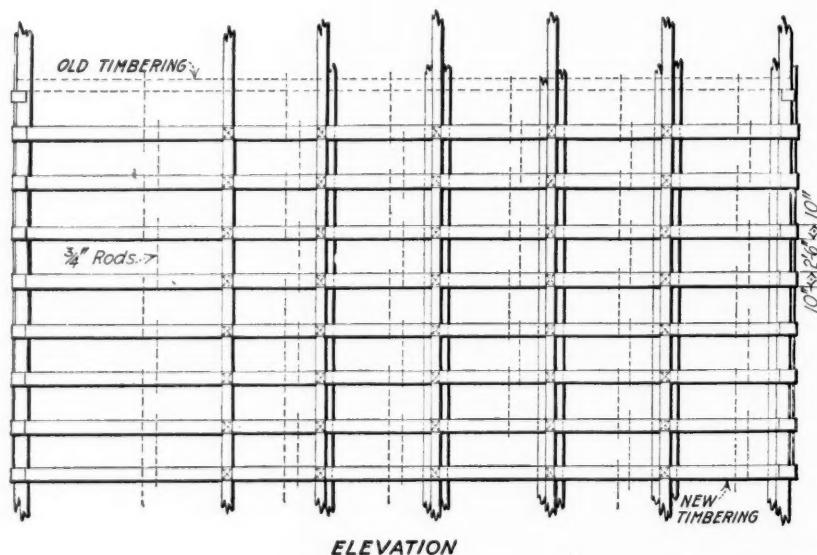
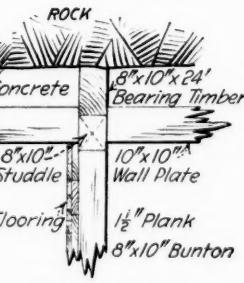
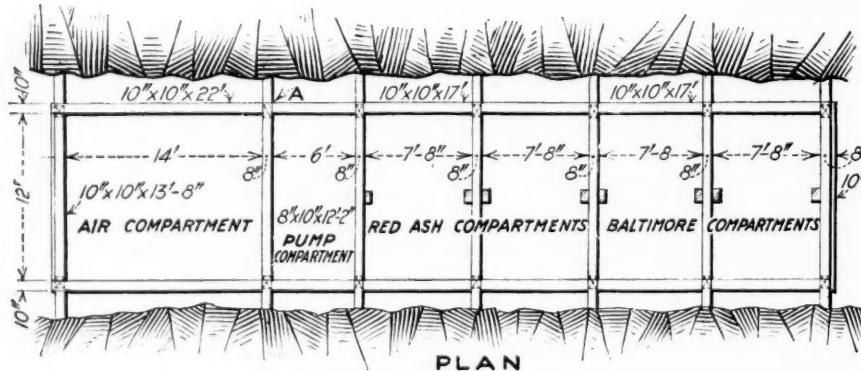
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used for the buntons and walls, also in all other places where it was found necessary to use concrete in strengthening the shaft.

As soon as the weight had settled on the buntons and walls, all the cavities on the south side of the shaft were filled with concrete. In all there were six of these cavities. When the concrete had fully set, the opening at the top of the fissure was cleaned out and 2000 bags of pure cement grout poured in, and on top of this 2000 bags of cement mixed with a like amount of sand. Thus the fissure was filled to the Hillman bed. The grout was sent down from the surface to the working place through a 6-in. steel pipe and was allowed to set thoroughly before the work was continued.

The next step was to shore up the loose rock in the shaft, and to that end two lines of shoring, of 8 x 8-in. yellow pine, were put in each compartment. These braces were placed about 4 ft. apart. Work was then started at the top of the squeeze to remove the rock, which had pushed out of place as much as 5 ft. in some places. Temporary working floors were placed, and the rock and broken timbers were loaded into buckets and hoisted to the surface.

When the rock was excavated the timbering was started. The wall plates are 10 x 10 in., the studdles and buntons being 8 x 10 in. All the timber, which is of yellow pine, is being framed on the surface before being sent down. The outside of the shaft timbers is being covered with 2-in. plank. The airway is lined first with 1½-in. plank and then covered with 1-in. flooring, which makes it completely air-tight.

NEW TIMBERS SUPPORTED ON LONG IRON RODS

The first set of new timbers, although started at the end of the old sets of timbers, was also supported from each wooden bunton by two 1-in. iron rods 40 ft. long, which were fastened to the old timbers above. Iron washers 1½ x 3 x 11 in. were laid across the old timbers, iron rods being passed through holes in these washers and fastened with a nut. At the lower end of the rods was a similar washer, which went under the new buntons, allowing them to hang on the rods. The ends of the rods were threaded for about 6 in., and this permitted their adjustment to the correct length, so that they would assume their proper amount of load.

It was proposed to use bearing timbers every 20 ft. These were to be 8 x 10 in. by 24 ft. It was later decided, however, after using one set, that they were not sufficiently strong, and to secure the requisite strength in another way concrete buntons were introduced. The new sets of timber, of which there are now 33 in place, are hung on 3½-ft. centers, each set of timber being suspended from the one above by 1-in. iron rods.

The smaller concrete buntons, which are well shown in the lower part of the diagram, in the lower left-hand corner of the illustration, are 2½ ft. wide and 8 in. thick, and extend from the solid rock wall on the north side of the shaft to the south side. The ends of the buntons on the south side of the shaft are made so that the top end curves up and the other down over the ends of the wooden buntons immediately above and below. Between the ends of the buntons and the south wall of the shaft the space is filled in with con-

crete. This "concrete ring," as it is called, is never less than 12 in. thick, and may be 3 or 4 ft., depending on the amount of space between the timbering and the wall of the shaft. If the space is less than 1 ft., a sufficient quantity of rock is excavated to get the proper thickness.

The concrete buntons now being installed are made half the width of the first buntons, as shown in the right-hand corner of the accompanying illustration, the change being decided on because it was found that the south wall was in excellent condition. For this reason, it was decided to suspend as much of the weight of the shaft timbering on the buntons as possible, as there might not again be found such a favorable condition. The concrete filling, or rings, act both to hold back the loose rock and as bearings for the buntons.

The Lehigh & Wilkes-Barre Coal Co. expects to have this shaft in operation by the first of the new year. The closing down of the shaft has cut the output of the mine more than half, all the coal now being hauled a roundabout way underground and brought to the surface by slopes.

Open Grate Fires Wasteful

BY VAN. H. MANNING

Director of the Bureau of Mines, Department of the Interior

The chilly days of autumn call attention to the proper use of the grate fire by those who will try to help the country save coal. When the need of using fuel economically is as strong as it is now, we can say, twisting our words a bit, that the proper way to use the grate is to use it not at all. If we look at the open grate as merely a heating device, and know how small a proportion of the total heat in the fuel enters the room to be warmed, we must regard the open grate as probably the most inefficient of all the inefficient devices used in heating a house. The cheer and companionship of an open-grate fire must not be charged against the heating bill, but to some other account.

Efficiency is always a ratio or fraction, and is what you get out compared with what you put in. Into the grate one puts fuel that has the ability to produce a large amount of heat, but the useful heat obtained from this fuel is relatively small. Most of the heat in the fuel goes racing up the chimney, in company with a large amount of air from the room, this air being replaced by cold air drawn in through cracks and crannies in the windward side of the house. As a device for drawing in cold air a grate is excellent, but it furnishes much more ventilation than is needed. Much less fuel, properly burned in a stove, would warm the house better.

The grate fire is such a cheerful, lively member of the household on chilly mornings and evenings, that it is loved in spite of its spendthrift ways. The present fuel situation, however, suggests that the grate should be filled with coal much less often than in the past. It should be used when only a little heat is needed for a short time. It should be fed on waste wood as much as possible. The flickering flames of a smaller fire may be made sufficient to excite the fancy rather than the scorch and the big roar of too full a fireplace. When steady heat is needed, economy suggests doing without the cheer and running the more sedate stove.

Motor Truck vs. Teams for Local Hauling Around the Mine

SYNOPSIS—Heavy grades made it necessary for one mining company to supplant its teams by a motor truck. Radius of haul and weight of load were thereby increased. The change proved extremely satisfactory.

THE local hauling that is required to be done around a colliery is no mean item when the expense involved is considered at the end of the year, and this fact led the Locust Mountain Coal Co., of Shenandoah, Penn., to do away entirely with the horses and wagons it was employing on this work at its Weston colliery and substitute a motor truck.

Another factor that largely influenced the decision to make the change was the extremely heavy grades encountered in the vicinity of the colliery, these grades in some places being as steep as 16 per cent. It was impossible for a team to haul more than a 3-ton load at one time over these hills, and the horses required frequent rest periods on the upgrades. It was just as bad going down hill, as it was then necessary to walk the horses the entire distance.

After considering the matter from every angle, the company purchased a 1½-ton White truck chassis, and at a total cost of \$35 for labor and material had a cab and platform body built at its own blacksmith shop.

The crew of the truck consists of a driver and one helper. These men are paid good wages, so competent men are secured. In addition to their wages the men are paid a bonus provided no extra teaming or truck hire is necessary, with a penalty attached for any time lost or extra team or truck hire required. At the end of nine months the men have not lost a single day due either to the truck being broken down or bad weather.

went 3600 miles and were then replaced by oversize tires, which are showing much better mileage.

One of the advantages of putting the truck on the road was that the company was thereby enabled to deliver coal to its employees at the same cost per ton for hauling as is charged in the town (the regular charge formerly being 50c. more than the town charge) and to reduce the cost of hauling to its village 25c. per ton. This should be credited to the hauling account, but is not shown in the statement of truck charges.

FIG. 2. DRIVER'S DAILY REPORT FORM

(see table). The hauling is regarded as a separate account and is shown under a separate heading on the monthly cost sheet of the company.

The truck has given entire satisfaction at all times and is always subjected to an overload. Instead of hauling 3000 lb. of coal, its rated capacity, it always carries 4480 lb. and is not considered loaded under 4000 lb. In one case a reel of rope weighing 6415 lb. was hauled up a 10 per cent. grade with no trouble.

In going over the statement, it should be distinctly borne in mind that the low mileage for gasoline, etc., is due entirely to the nature of the work, for if the truck were used on ordinary roads, the mileage per gallon of gas would be doubled.

In addition to its regular equipment two sets of Weed tire chains are carried, also a 10-ton Simplex jack. The jack is a great convenience in case of the truck falling into a sewer, as has happened in delivering coal in some back streets. The Weed tire chains should be kept in perfect repair, and in order to keep them this way two sets are carried, so that one may be



FIG. 1. TRUCK HAULING LUMBER; NOTICE THE STEEP GRADE

The driver is required to make a daily report, a copy of which is shown in Fig. 2, and this report is posted into a monthly sheet. An accurate record of mileage is kept by a hubodometer, which is also used to keep a check on tires, gas, etc. The first set of rear tires

WHAT IT COSTS TO OPERATE A 1½-TON WHITE TRUCK FOR NINE MONTHS, EXCLUSIVE OF LABOR

Month	Total Mileage per Month	No. of Gallons, Gas	Miles per Gallon	No. of Quarts	Miles per Quart	No. of Pounds	Miles per Pound	Cost per Mile, Gas	Cost per Mile, Oil	Cost per Mile, Grease	Cost per Mile, Depreciation	Cost per Mile, Tires	Total Repair Cost	Cost per Mile, Repairs	Total Cost per Mile Without Labor
January.....	675	167	4.04	581	11.50	20	33.7	\$0.0570	\$0.0065	\$0.0019	\$0.093	.....	.....	.....	\$0.1584
February.....	460	135	3.41	49	9.30	5	92.0	.0670	.0080	.0007	.136	.....	.....	.....	2117
March.....	524	149	3.52	59	8.10	25	21.0	.0670	.0092	.0031	.119	.....	.....	.....	1983
April.....	625	131	4.77	44	14.00	25	27.8	.0480	.0053	.....	.100	.....	\$5.35	\$0.0086	1619
May.....	694	132	5.26	54	12.80	25	27.8	.0437	.0058	.0022	.090	.....	45.32	.0653	2070
June.....	785	150	5.23	61	12.80	40	19.6	.0459	.0058	.0034	.080	\$0.036	9.41	.0120	1831
July.....	692	150	4.61	72	9.54	.....	.....	.0520	.0078	.....	.090	.040	.....	.....	1898
August.....	700	179	3.91	49	14.30	25	28.0	.0610	.0052	.0024	.089	.040	7.41	.0106	2082
September.....	722	160	4.51	62	11.60	25	29.0	.0550	.0064	.0023	.087	.040	.....	.....	1907
Total for nine months	5,877	1,353	4.34	511	11.5	165	35.6	\$0.0543	\$0.0065	\$0.0019	\$0.0957	\$0.04	\$67.49	\$0.0115	\$0.2099

NOTE:—Found that tire charge should have started immediately, and therefore carry it on total.

available at all times. If the chains are in good condition, ice or snow need cause no alarm, as the truck works as well in winter as in summer.

In conclusion it might be well to remember that with a motor truck the best grade of oil and tires is the cheapest and gives the best results in the long run.

Lubricating Oil Density

By W. F. SCHAPHORST
New York City

It is unfortunate that such a term as Baumé is used in connection with determining the density or specific gravity of oils. It means little to the average man. A salesman once came to me with his sample case full of small bottles of oil. He took out one of his bottles, placed it on a table, put a hydrometer in it and exclaimed: "There! How's that?" I said "How's what?" And thereupon he tried to explain to me that the little hydrometer floating in his oil proved beyond a shadow of doubt that his oil was a superior variety. I couldn't "see it," of course, and didn't buy. Since that incident I have learned that the gravity test doesn't amount to anything anyway.

The hydrometer test is of value principally for identifying oils. For example, if you have been using a certain brand of oil for some time and you want to continue its use, just measure its density by means of a hydrometer and make note of it. Then the next time you buy oil that is claimed to be the same as the last, you can at least easily check up its density. The density test is the easiest of all to make, especially if you have a hydrometer.

Coming back to the word "Baumé," perhaps the reader would like to know how to convert it into understandable English. It is done in this way: When you are told that an oil has a density of "so many degrees Baumé," just add the "so many degrees" to 135.88 and divide the sum into 145.88. The result is the density or specific gravity.

For example: What is the density of a 31-deg. Baumé oil?

$$31 + 135.88 = 166.88$$

$$145.88 \div 166.88 = 0.875$$

In other words, the oil is just seven-eighths, or $\frac{875}{1000}$ as heavy as water.

It is evident, then, that an oil whose density is 10 deg. Baumé is exactly as heavy as water, because

$$\frac{145.88}{10 + 135.88} = 1$$

The density of an oil can be determined with accuracy, however, without the use of a hydrometer. In fact, if you have an accurate weighing instrument you can do a more accurate job.

In a nutshell, this is the method: (a) Weigh a clean empty jug. (b) Weigh again when filled with water. (c) Weigh again when filled with the oil. The density can then be determined by using this simple formula:

$$\text{Density} = \frac{c - a}{b - a}.$$

This, it will be noted, is nothing more nor less than dividing the weight of a certain volume of the oil by the weight of the same volume of water. If you have accurate and delicate weighing balances, I would suggest that you use a small vial for this test. If you have nothing but large scales for weighing heavy objects, you can make the test very well by using a large or ordinary jug, as suggested above. The temperature of the water, oil and jug should all be the same while making the test. If possible the temperature of all three should be 60 deg. F., as this temperature is considered standard.

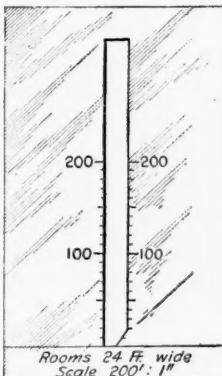
Labor Saver for the Draftsman

By M. H. GOODNOW
Du Quoin, Illinois

A labor-saving device intended for the use of draftsmen in the plotting of mine rooms which are run regularly and on sights is illustrated below. The contrivance

is made from a thin piece of celluloid (such as a cheap protractor) in which a long, narrow oblong is cut. The sides should be parallel and far enough apart so that pencil marks made with these sides as straight-edges will form an oblong the scale width of the mine rooms.

With a line at the base of the oblong and perpendicular to it as zero, erect a scale on either side of the portion cut out, the hole and the scales to be extended farther than the scale distance of the longest room. With the device just described a room of the standard size can quickly be marked on the map and the crosscuts shown by using only one instrument, instead of the two triangles and a scale customarily employed.



The Saloon Evil in the Mining Industry

BY ANTHRACITE SUPERINTENDENT

THE statement on page 907 of the Nov. 24 issue of *Coal Age*, to the effect that Government officials, members of the Committee of Public Safety and coal operators were taking steps to reduce or altogether eliminate the saloon evil in the coal regions of the State of Pennsylvania, impressed me forcibly. I have never been able to understand why drastic steps were not taken a long time ago to combat this evil.

I would not attempt to estimate the amount of money spent by coal companies annually in the employment of efficiency engineers, safety committees, capable men specially trained in first-aid and social welfare work, for educational purposes and for modern machinery for economy in operation and greater production, not one cent of which was used to eliminate the effect of the saloon on their business and in the homes of their workmen.

The war has forced men in all lines of business to do many things which they heretofore considered were impossible, and the mining industry is no exception. The shortage of labor in the coal regions due to the exodus of the men to munition and other industries paying higher wages, together with the demand of the miners in all parts of the country for increased wages, has forced the operators to meet this latter demand.

What assurance is the mine owner given that added wages will produce the desired result—greater production? Compelled by circumstances and the demand for greater production, the operator has concluded that something other than periodical wage increases is necessary. He is confronted with the usual loss in production following paydays and appreciates in a fuller degree than ever before the effect of the saloon on his business and the necessity for finding a way to correct the evil.

REMEDY MUST BE FOUND FOR SERIOUS SITUATION

What remedy can he apply if he fails to find a legal way? The time was when a penalty could be inflicted on the man who was known to have been idle after payday to spend his time in the saloons. This was followed by discharge when he committed the offense too often. Conditions were such then that, once he was discharged for this reason, he found it difficult to get work elsewhere. Men were more plentiful, and when a "boozier" was discharged by a foreman, another at an adjacent mine knowing his habits and reputation for losing time would not hire him, with the result that the evil in a measure was reduced. Today that same foreman will say, "Well, if he only works a few days in a month, it will mean a few cars more"; and the miner, knowing that a scarcity of labor exists, takes the liberty to lose time after payday.

The time was, too, when the effect of the saloon was felt only once a month. With the advent of the semi-monthly pay, the loss in time worked and in the output of coal after each payday became more noticeable. The mine foreman and the superintendent were invariably called upon after each payday to explain the reduction in output and, when it was justly blamed on the effect of payday, were told that the evil must be broken up. To

Thinks National Prohibition Only Solution of Saloon Evil

I am in hearty accord with the views expressed in the article "The Saloon Evil in the Mining Industry," except that I have become a strong advocate of national prohibition.

The time was when I considered the question of temperance a matter of personal privilege, but during 25 years' connection with the coal-mining industry I have gradually come to view the matter in the light stated above, as a result of having seen the enormous economic waste recited by the writer of the above-mentioned article.

A number of coal-mining companies in the central and western Pennsylvania bituminous fields, and elsewhere, I presume, have recently adopted the plan of reporting the names of men absent from work and quitting early, with the reason given by the absentee and the real reason therefor, and posting on the bulletin board at the mines a copy of the report, with the result in some quarters that there has been a considerable diminution in the number of payday drunks and a larger percentage than ever before of men at work the few days following paydays; the reason being that some of the men did not like to be posted on the bulletin board as being absent from work on account of drunkenness.

Regulation of the saloon in the above-mentioned territory will not do much good, as most of the drunkenness is due to the peddling of liquor throughout the mining communities by the wholesale liquor houses and breweries. Sectional prohibition will not do much good either.

It is the opinion of the writer that national prohibition will bring about a large increase in the production of coal in this country; greatly lessen the accidents in the mines, many of which are no doubt caused by befuddled brains as a result of drink; and go a long way toward helping to bring to a successful termination the terrible war in which we are now engaged.

EDWARD H. COXE,
General Superintendent, United Coal Corporation,
Pittsburgh, Penn.

do this they could resort to no other method than to inflict a penalty, as stated before, and which usually consisted of suspending the miner for one or more days, depending on how many days he had lost. Had the evil received the consideration then which it is receiving, or should receive, now, its elimination would hardly be so difficult.

It will probably be argued that it is not advisable, on account of the scarcity of men, to attempt to correct the evil at this time. With this I do not agree. A scarcity of labor exists throughout the country and in numerous lines of business which are not affected, either on payday or at any other time, by the saloon. Railroads and many other industries never would, and will not now, tolerate the effect of the saloon on their business and adopted a policy long ago not to employ that class of men who render themselves unfit for service through drink. Men seeking employment from these industries soon learned that policy and governed themselves accordingly. If schedule passenger trains failed to make their runs, and if freight was delayed because of a

shortage of crews after each payday, what would the public demand, and what would the railroad company or the Government do? What business or industry has tolerated, or has been compelled to tolerate, the saloon evil to the same extent as has the mining industry?

A few figures to illustrate the loss of production in the anthracite region after paydays may be of interest, and to many, perhaps, startling. There were employed in the anthracite industry in 1914 approximately 46,000 miners and 37,000 miners' laborers, a total of 83,000. I think I am safe in assuming that 30 per cent. (mostly laborers) have either left the country or gone to other industries, so that there are at the present time about 58,000 men engaged in the cutting and loading of anthracite coal. It is not uncommon to have 20 per cent. of these men idle the first day following a pay, and from 7 to 8 per cent. for the next four or five days.

On this basis, and assuming that each man could produce 5 tons per day, there would be a loss in output

Suggests Late Opening and Early Closing of Saloons

When the war broke out, the saloon keepers in the towns of Carbon County, Pennsylvania, where our mines are located, were asked to not open their saloons before 7 o'clock in the morning and to close them not later than 12 o'clock at night. This was voluntarily agreed to by the saloon keepers and has been lived up to by them with the effect that we no longer have men coming to work in the morning who had stopped in the saloons on their way, nor were the men allowed to stay in the saloons late enough at night to prevent their being able to come out to work the next day.

In regard to the general question of prohibition, I have found from my experiences that the largest amount of time has been lost after paydays in towns having local option, where the liquor could be shipped in to them. When received in this way, they were seldom willing to stop their drinking until the entire stock had been exhausted, with the effect that there was always two or three days after payday when the tonnage was extremely light.

In one state where I worked under absolute prohibition, where nothing was allowed to be shipped in, the difficulty was with the peddlers and bootleggers, who sold the worst kind of liquor to the men; and the fact that it was prohibited made it seem necessary to the men buying it that they absorb all that they bought in the least possible time, with an extremely bad effect on their working ability.

The most successful work of that kind that I had in connection with drunkenness, was at Old Mexico, where, on account of the cheapness and fiery nature of the native whiskey, there was a great deal of drunkenness of a dangerous kind, winding up in shootings and stabbings. We met that condition by opening saloons selling nothing but beer and light wine, and prohibited, under heavy penalties, the bringing into camp of any stronger liquor. The effect was remarkable in eliminating practically all drunkenness.

To meet the present conditions, I would strongly recommend the plan that we have found successful here, of not opening the saloons until after men go to work and closing them as early as the saloon keepers will permit in the evening.

EDWIN LUDLOW, Vice President,
Lehigh Coal and Navigation Company.
Lansford, Penn.

after each semi-monthly pay of 145,000 tons, or, for 24 pays, about 3,500,000 tons per year. The corresponding loss in wages, based on an average earning of \$3.50 per day, would amount to nearly \$2,450,000; at \$4 per day it would amount to \$2,800,000, and at \$5 per day, which will be a conservative average earned by the miner following the increase recently granted, \$3,500,000, which sum is lost to business in general. Add to this, if you will, the loss in production and wages in the bituminous region and the figures become alarming.

Whenever the business of any community suffers from the effects of a strike, be it a petty or a prolonged one, it is given prominence in the newspapers; and the public, including the saloon proprietor, rejoices over its settlement. The loss to business and production due to idleness for inefficiency after pay, except for unfavorable comment, goes on without much notice.

We read almost daily that industries are about to shut down for want of coal. Only recently the newspapers announced that the public schools of Reading, Penn., were to be closed because of the inability to get coal to furnish heat. Think of it, a city located only 35 miles from the anthracite coal field being compelled to close its schools for lack of fuel, when thousands of tons are lost through the lack of men after payday.

I am not a strict advocate of prohibition, and my remarks are not aimed at the manufacturer or seller of liquor. They have been licensed to do it. Neither have I the slightest intention of depriving the miner of a drink if he finds it refreshing upon arriving home after a hard day's work. That is his privilege and his business. I am concerned, however, about the manner in which the business is conducted and its effect throughout the coal regions, particularly at this time when there is the greatest demand, both by the Government and the public, for greater production.

It will, no doubt, be argued that the shortage of fuel is due to a scarcity of railroad cars and other causes. Very true; but there have been many days after pay, when cars were plentiful, that it was possible to operate the mines for only a half day because a number of men laid idle. Such days not only resulted in a loss in output, but worked an injustice to thousands of company men who were deprived of a full day. Railroad cars which should have been loaded and placed in service stood idle as a consequence until the following day.

Manufacturers in nearly all lines of business are being urged to speed up. All around us we hear of a shortage of fuel. Priority orders for the transportation of fuel to relieve the situation have been much talked of. The sale of liquor to our soldier boys is strictly prohibited by law, and punishable by fine for violation. Why cannot a remedy be found to correct the evil of the saloon in the coal region? The question has always been one of importance, and surely, under present conditions, is of greater importance than ever before. There are any number of manufacturers, superintendents and foremen throughout the coal fields who, aggravated by poor results after paydays, have given considerable time and thought to this most perplexing evil in an effort to break it up. There are few who have not been confronted with the problem. I am sure the readers of *Coal Age* would be glad to receive the benefit of the methods used by those who have succeeded in breaking up the practice.

Coal Mining Institute of America Meets—I

BY R. DAWSON HALL

The salient features in this meeting were Francis S. Peabody's address on the importance of preparing coal during the war and on the explosives question, the discussion of the new revenue act and an unscheduled debate on the demerits of the piece-labor system. The institute never held a better attended meeting or received a more satisfactory treasurer's report. This installment of the article covers only a part of the proceedings prior to the leading features of the institute.

A MEETING where dues are increased, and yet 200 new members are added to the rolls, must always be regarded as a high tide in the history of any institute. Since it was started as the Western Pennsylvania Mining Institute back in 1887, the Coal Mining Institute of America never held a better attended or more successful meeting than that which convened at the Fort Pitt Hotel, Pittsburgh, Dec. 5 and 6. The banquet with its interesting features brought out 350 persons. At the meetings there were about 150. Business meetings of that size have often been secured at Pittsburgh, but they were usually obtained only by inducing the mining departments of the colleges of that city to send their students to the sessions. This year apparently none of these were present, yet the room was well filled until almost the end of the meeting.

The report of the treasurer showed all bills paid and \$69 in the treasury. This report and the publishing in one volume of the proceedings for the three preceding years so pleased those present that when the election was held there was no difference of opinion—the outgoing president and secretary-treasurer were reelected by acclamation. W. E. Fohl, W. R. Crane and W. E. Lahm were elected as first, second and third vice presidents in the order named. Then followed the election of A. R. Pollack, Thomas K. Adams, Thomas H. Thompson and Richard Maize. All this was done without any fussing with ballots and tellers. The unanimity about the directorate and officers of the institute saved an immense amount of valuable time. As the vessel was in good sailing, no time was wasted in trying to read out of the membership those whom the constitution says must be recognized as members.

The institute voted that all members in military, naval and aviation service be regarded as honorary members during the duration of that service. As the institute membership is badly scattered, a complete list of the members at the front could not be obtained; but on the list are Major J. B. O'Hara, Captains T. S. Dunn and Harry B. Meller, First Lieutenants Edwin E. Chance, W. J. German and James Cameron and Sergeant W. E. Dickson.

On the recommendation of the president of the institute, the dues were raised from \$2 to \$3 without a single dissenting voice. The new rates will go into force to date with Jan. 1, 1918, the new members being invited to date their applications as for 1917 or 1918, the proceedings of course being received by those only who take

out membership in the present year. A committee on resolutions was appointed to prepare among other matters an expression of the institute's bereavement in the loss of William Seddon, a founder of the institute and an honorary member; Austin King, chief inspector of the H. C. Frick Coke Co.; George W. Schleuderberg, general manager of mines, Pittsburgh Coal Co., and Henry Loutitt, a former state mine inspector. Mr. Loutitt was not a member at the time of his death, but was at one time an active institute worker. In looking over the list of founders of the institute on the facing page, William Seddon's name will be found at the head. The photograph was in fact obtained from him about two years ago. The tenth name in the first column is that of Henry Loutitt, and the twelfth name is that of William Seddon. At the close of the meeting the resolutions committee presented a resolution in which the services of the deceased members were duly recognized.

PRODIGAL IN SPENDING OPERATORS MONEY?

When the question box was introduced by W. E. Fohl, he proposed to have the order of consideration voted by the institute, but as the program had already specified some subjects for consideration in the afternoon session it was decided to take the questions in order so that those who had planned to be present at the afternoon session and were not at the morning session would not be disappointed. The first question was:

What consideration should a state mine inspector give to the cost of improvements recommended in the interest of safety?

R. R. Dunlop, of the Jeffrey Manufacturing Co., urged that mine inspectors be invited to visit factories in which mining materials and appliances are made so that they may be enabled to use judgment as to the difficulties involved in complying with certain requirements that they make. Thomas K. Adams, a Pennsylvania mine inspector, declared that a careful differentiation should be made between those things that are actually ordered in the law and those which are only constructively ordered.

Mr. Adams said that the mine inspector's imagination, like that of other men, was apt to run away with him; and inspectors sometimes demand more than the law authorizes them to demand. He felt that a wise discretion should be used in the execution of the law and care taken not to advocate the introduction of something impracticable. He believed that every requirement which was only constructively ordered by the statute should be discussed with the mine operator and that a clearer knowledge of the details of manufacture would by no means come amiss.

H. M. Wilson, of the Associated Companies, turned the question somewhat by suggesting that it might be well to discuss the duty of the mine inspectors to change the rating of some mines from "gaseous" to "nongaseous." He said that some mines were gaseous when working in coal under heavy cover, but on reaching light cover they become absolutely free of gas. He questioned whether a gaseous condition detected in the re-

mote past justified the inspection service in requiring provisions against explosive mine gas indefinitely.

W. L. Affelder said that a mine which had shown no gas for four years had despite protest been retained as a gaseous mine. He said that there was no provision of the mine law for the withdrawal of safety lamps from a mine that only in the dim past had emitted gas. When conditions have entirely changed he thought there should be some way in which to compel the mine inspector to take cognizance of that fact.

Thomas K. Adams urged that action should be taken under Article 20. If the complainant had a good case, there is no reason why he should not receive relief no matter how little the inspector in the district might be disposed to grant it to him. He said that he had been in committees of inspectors appointed by the Chief of the Department of Mines of Pennsylvania under Article 10, Section 1, and had himself reported against the introduction of safety lamps despite the protest of the mine inspector of the district. However, he overlooked the fact that Article 10, Section 1, refers to the *introduction* of lamps and not to their removal. The law under Article 10, Section 9, says that "at any mine wherein explosive gas was generated within one year before the passage of this act, in sufficient quantities to be detected by an approved safety lamp, a sufficient number of safety lamps, not less than one-fourth of the number of safety lamps in use, shall be kept in a convenient place and in good condition in case of emergency." Evidently the law did not intend to require safety lamps to be kept in stock at those mines which had generated gas over a year ago, but had ceased during the last year to do so, and the section throws absolutely no light on the requirements as to the *use* of lamps where gas has not been found for a year or over a year.

Section 3 of Act 330 states that firebosses shall be employed at mines "wherein explosive gas has been generated within one year before the passage of this act or shall be generated after the passage of this act in sufficient quantities to be detected with an approved safety lamp." Clearly one year's absence of explosive gas seems to be regarded as guaranteeing immunity, but the wording is certainly lacking in applicability to the subject at issue.

It does seem that if all elementary precautions may be thrown aside after a mine has been found free of gas for one specific year that certain particularly drastic precautions such as requiring all men to carry safety

lamps could be most logically permitted if the mine was found free for any year whatsoever. It is certainly more risky to operate without firebosses and additional lamps than it is to permit the mine workers to work with naked lights in places found to be free of gas by certificated firebosses operating under governmental regulations.

W. L. Affelder proposed the following hypothetical question: Given a mine on the retreat, that has had no gas for four years, where firebosses have been employed for that length of time and for the period preceding it, is it necessary to continue the use of safety lamps?

Could not carbide lamps be legally and safely substituted? Mr. Affelder added that the mine in question adjoined another mine, which was officially known as a nongaseous mine and the men in one mine working with safety lamps could see the men in the other mine working with naked lights. Thomas K. Adams said that under such circumstances he would say that the inspector could not legally insist on the use of safety lamps. C. P. Byrne raised the possibility that gas might be present on the top of inaccessible mine falls and might suddenly be driven into the mine by a further roof fall. Mr. Affelder replied that in four years much retreating could be done, and if gas was not found in those four years it was little likely to be present later. The trouble as he saw it was not in keeping safety lamps out of a mine of a safe character, but in getting safety lamps out of

a mine that had at one time been declared gaseous. The law provided amply for legal resistance to the introduction of lamps, but inadequate redress where a mine recognized as dangerous had become safe as a result of the change in the character of the working or the depth of the cover. F. L. Parker, of the Bureau of Mines, called attention to a recent explosion in a mine that had never had a showing of gas, but which nevertheless exploded, the death of 23 men resulting.

C. P. Byrne declared it would be a good thing if there were more coöperation between the mine inspectors and the manufacturers. Many mining appliances of all kinds are being put on the market by people who are not in close touch with mining conditions. For instance, to help the triprider to mount an electric locomotive one concern has put a step 4 in. from one of the wheels of the locomotive. This step is safe enough provided the triprider does not miss it. If he does miss it, his leg slips under the wheel and he loses his foot, if not his whole limb. (To be continued.)



Questionnaire on Explosives Regulation

At the banquet of the Coal Mining Institute of America, held at the Fort Pitt Hotel, Pittsburgh, Penn., Dec. 5, the following questions were presented and answered by Francis S. Peabody, chairman of the Committee on Coal Production and assistant director of the Bureau of Mines in charge of the new law relative to the handling of explosives:

Q. Can explosives (including caps, fuse, etc.) be sold or issued by company stores or dealers to enemy aliens or subjects of countries allied with the enemy?

A. No.

Q. How can such persons (or firms) obtain explosives or fuse?

A. Only through a licensed foreman, employed by the operating person or firm, from a magazine located on the premises, in quantities sufficient only for a day's work, for use only on the premises of the operator, to employees only and records required by law, kept by the licensed foremen, of such explosive so issued.

Q. Are miners required to have a license to purchase, possess or use explosives, caps and fuse, etc.?

A. All miners or other persons, firms, etc., require a license except when such material is issued to employees through a licensed foreman from employer's magazine, etc.

Q. Are mining companies required to have a license and what kind?

A. A purchaser's license only in case the operator purchases such material only for his own use and that of his employees on his own premises. In addition to purchaser's license a foreman's license is necessary for the employee of the operator who issues such material from the magazine to employees. A vendor's license will also be necessary if the operator sells or issues explosives, caps or fuse to employees or others for storage or use away from the premises of the operator or for any other use than on the work on which an employee is engaged, and in such cases the person or firm to whom such material is so sold or issued must possess a purchaser's license, and the vendor must keep the records required by law.

Q. Are company stores and dealers required to have a license and what kind?

A. A vendor's license.

Q. Can company stores issue explosives to employees of a mining company?

A. No. Must be issued through an employee of the mining company who holds a foreman's license, such person, however, may be a joint employee of the operator and store company.

Q. Is more than one license required for a mining or store company with more than one operation?

A. If all the operations are located within the bound of one state, one purchaser's or vendor's license will be sufficient, provided photographic or photostatic copies of the original license, certified by the Bureau of Mines at Washington, D. C., is placed on file in the office at each operation; otherwise the proper official at each operation must obtain a license from the local licensing agent.

Q. What do licenses cost and where can they be obtained?

A. Licenses cost 25c. each and can be obtained by application in person to the nearest Licensing Agent, in Allegheny County, Mr. Wm. B. Kirker, Prothonotary, Pittsburgh, Penn., and additional Agents at Tarentum, Elizabeth, Bridgeville, McKeesport, and at the County seat of all other counties and as many other important mining centers as we have been able to get a satisfactory man to act as Lessor. These Agents have been provided with all necessary blanks and instructions.

Q. Can and will additional Licensing Agents be appointed?

A. Yes. As many as may be necessary for the convenience of the public.

Q. How can such appointments be obtained?

A. Any reliable operator or citizen can recommend a proper person for appointment as Licensing Agent, presenting definite statement as to the necessity for same and giving specific information as to name, address and official title of such person and bearing in mind that Licensors must be loyal American citizens, capable of keeping necessary records, making reports, empowered to administer oaths and preferably with office headquarters and available and accessible to the public within reasonable hours each business day.

Q. Who is the State Explosives Inspector and where located?

A. John W. Rittenhouse, Scranton, Pennsylvania.

Mr. Peabody also said that a teamster might act as agent for the company in distributing explosives to centers of distribution, but the explosive must be delivered to the miners at that magazine by a licensed foreman. By the counting of packages, proper care should be taken to see that no explosives were abstracted in transit. In fact, frequent inventories should be made of the stock of explosives on hand with due reference to the receipt, sale and delivery of such explosives.

Forms for the Local Shipping Department

BY GEORGE N. LANTZ
New Straitsville, Ohio

Numerous articles have been published in *Coal Age* showing bookkeeping forms covering a number of mining operations. Records for inside work have been covered in detail. Methods of buying, selling and standardizing supplies have been described. Contract forms, material requisitions, statistics on output per man and output per month have been shown and appraised.

The object of this paper is to propose certain forms for use of the weighmaster at the mine, a subject which has not as yet received attention. The work of the weighmaster in weighing and billing coal is of sufficient importance to justify means to facilitate his clerical work and to provide, as far as possible, against mistakes.

The forms illustrated herewith are submitted for use at the mines of companies whose main office is situated away from the mines, where the headquarters can be reached only by mail, or by telephone or telegraph. In such cases, where two or more mines are operated in the same district, they should, if possible, be connected by telephone, and the head weighmaster at one mine should supply orders and instructions to the weighman at all the rest. He should also report to the railway company for all the mines, and where there is no clerk to take the work should make reports to the main office for all mines. Having all orders go through the hands of one man will permit a general oversight of all orders and promote prompt shipment, by interchanging orders from mine to mine on occasion, at the same time guarding against duplication.

The weighmaster should be supplied with written orders, both due and futures, in some such form as is shown in Fig. 1. With future orders on hand, the weighmaster is in possession of information that is often valuable to the foremen in choosing a convenient time for necessary repairs. But the information is more valuable to the shipping department than to the operating department, since the head weighmaster can, to a great extent, eliminate changes in preparation, by arranging for the loading of certain mines. One man might load mine-run exclusively, another domestic lump, another steam lump, etc. Telephone orders and instructions should, as a rule, be confirmed in writing. This is especially true where instructions are given by telephone for future loading, although it is not necessary to confirm instructions for use on the day given.

A shipping record should be kept at the time. A convenient record is shown in Fig. 2. A postal notice

Mr. _____		ORDER NO. _____	9"
		Date _____	
Please ship At _____ Route _____ Dates _____ _____ _____		SHIPMENTS DATE INITIAL NUMBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	
Mail notice to _____ Address _____ Their Order No. _____			
Remarks _____			

FIG. 1

FIG. 2

FIG. 3

COAL SHIPPED BY _____			MINE NO _____			DATE _____						
Order No	Consignee	Destina-tion	Route	Cars Initial No	Grade	Weight Lbs Tons	Price	Amount	Jour	Postal Notice to	Address	Their Order No
1												
2												
3												
33												
34												
35												
Total												

FIG. 4

TONNAGE REPORT MINE NO. 19	
THE BLACK CO.	
TONNAGE FROM WEIGHTSHEET	
6" Lump	Tons
1/4" "	"
3/4" "	"
M. R.	"
Egg	"
Nut & Egg	"
Nut	"
P & S	"
N.P.S.	"
6" M.R.	"
Boiler Fuel	"
House Coal	"
Total	"

FIG. 5

6"

Agt. Ry. 19

Please reconsign the following car shipped
from our Mine No. on

INITIAL	NUMBER	GRADE
CHANGE TO		
CONSIGNEE	DESTINATION	ROUTE
ORIGINAL LADING		
CONSIGNEE	DESTINATION	ROUTE

THE BLACK COAL CO.

Per _____

FIG. 7

6"

THE BLACK COAL CO.			
MINE REPORT			
Mine No.	_____		
Hours worked	_____		
Cause of idleness	_____		
Cars loaded	_____		
Cars to go	_____		
Dead heads	_____		
Empties left	_____		
Part loads left	_____		
Lake coal	_____		
Fuel	_____		
Work or no work tomorrow	_____		
Want tomorrow	_____		
Phoned by	to	at	M

FIG. 6

THE BLACK COAL CO.	
Please refer to	
INITIAL	NUMBER
reported to you on	
and make the following changes	
WEIGHMASTER	

FIG. 8

4"

19

Mr. _____

Please refer to
our Order No. _____
and make the following
notation

16

FIG. 9

FIGS. 1 TO 9. FORMS FOR USE AT MINES OF COMPANIES WHOSE MAIN OFFICE IS SITUATED AWAY FROM COLLIERIES

of shipment of a form similar to that shown in Fig. 3 should be mailed to each customer. Fig. 4 shows a form of a daily report of coal shipped, which should be made up by the chief weighmaster or clerk, who may make up the report from shipping record (Fig. 2) and mail postal notices; or, when they are written at the mine, the report may be made up from the postal notices.

The book for shipping record is shown with leaves 10 in. wide, but in case they are turned in to the local office in the evening a convenient size for carrying would show 5-in. leaves with half the form on the left-hand page and half on the right-hand. A "Remarks" column could be added, if desired, but it is not a necessity, because, as a rule, dealers' names, for other than direct orders, are well known and need only be given by initials or in abbreviated form, thus leaving room in this column for customer's order number or a small notation.

A good plan is to make out a tonnage report at the mine, in the form of Fig. 5. This is valuable for comparison only, since the tonnage taken from the weighsheet and that shown as a total of the various places to which it is diverted will almost never correspond. When railroad scales are not used, the marked capacity of cars of 5 per cent. over can be entered. The two tonnage items should, of course, bear much the same relation to each other from month to month, but they may vary greatly from day to day. The amount of coal in partly loaded cars in the morning will not be the same as in the evening. A difference will exist, also, in the amount of overweight, when overweight is carried. When much coal is thrown out without docking, the weighsheet tonnage may be long, through no fault of the weighmaster.

A report to the railroad company of loading is shown in Fig. 6. This may be increased in length or width to take reports of several mines, or a separate sheet may be used for each.

Instructions to the railroad agent to change billing is shown in Fig. 7. This should usually confirm telephone instructions. Fig. 8 shows a form on which to report such changes to the main office. Fig. 9 should be used at the main office for cancellations or changes in orders.

MINECDOTES

The Story of the Gas Feeder

"Yes," said the mine boss to the master mechanic, "you probably have the hardest job in the world; but one thing is true, you don't have to contend with gas except what is generated in the shop by some of your able imitators."

"Oh, I don't know," replied the master mechanic. "I have noticed we never have to speed up the fan when you are down in the mine. You always seem to carry plenty of breeze along with you."

"Maybe," answered the mine boss, "but I can recollect two or three times when I wished my lungs were air compressors. Did I ever tell you about the time I set off the fireworks for the ladies?"

"I expect you have," replied the master mechanic, "but the story will be so much different this time that I probably won't recognize it, so go ahead."

"I do have to stretch them sometimes," returned the mine boss, laughing, "to keep from being completely outclassed, but this is a true story."

"When we were driving old No. 1, we ran into a fault where the coal pinched down for a distance of 60 ft. or so, and like most faults in this mine, the seam carried a small amount of gas. There was not enough of it to require using safety lamps, and it was customary for the miners when they started work in the morning to blow it about a bit with their coats and then set it off. The flame would sweep back a foot or so from the roof for maybe 20 ft. from the face, which was all there was to it. The men could then put in their shift without any more trouble."

"Well, one Sunday the 'Old Man' came out with some of his friends who had never seen a mine, and wanted to show them around. There was the boss and his wife, this gentleman and his wife and their daughter, a young lady about twenty."

"We now come to the point of the story," interrupted the master mechanic. "Brave Mine Boss Saves Beautiful Heiress from the Flames. Undying gratitude. Generous reward. Raise in salary. Yep, I see it all."

"You see nothing, as usual," replied the mine boss, testily. "This is what really happened. I took the party down and showed them the workings. We went part way up in No. 1, and the boss, who knew how we were working the gas, thought it would be interesting to show how we burnt it out. I didn't like the idea very much, but I agreed; and while the rest of them waited back down the entry, I went up to light it off.

"Well, sir, there must have been a little more than usual, because before I got to where we ordinarily lit it, away she went; and the first thing I knew I was flat on the bottom, wallowing in a puddle of mud. In the excitement all the lights went out, and the women were yelling and scrambling in the dark down the gangway.

"Old Jake Crosby, who was master mechanic at that time, was along, and I hollered to him to light up. He didn't answer, but as I got up I saw somebody coming from 'way down the entry. It was old Jake. And I bet he must have run 50 yd. in 4 sec. He came hurrying up all excited and shouting, 'Is everybody all right! Is everybody all right!'

"No damage was done except that I ruined a good suit and got a nice hair singe free; but believe me, I learned a lesson right there. Never again. I wouldn't even light a gas jet now for the Queen of Sheba!"

War-Savings Conventions

One of the plans adopted in the war savings campaign, which started on December 3, is for a series of state conventions. The first convention was held in the New England States, New York and New Jersey on Nov. 26, and others in different states will follow in rapid succession. These conventions are expected to arouse great interest and enthusiasm and give a great impetus to the campaign. Publicity men and other officials and workers in the various states will be named at these conventions to conduct the work in their states.

P. J. Rogers

P. J. Rogers, one of the "Old Guard" in the mining history of Alabama, died at Ensley, Ala., on Nov. 30, at the age of 62. For about two years Mr. Rogers had been president of the State Convict Board, having resigned in 1915 from the position of superintendent of mines for the Tennessee Coal, Iron and Railroad Co., a position he had occupied for a period of 30 years. His work for the state was very successful as the result of his untiring personal work to increase the efficiency of the department. Governor Charles Henderson, on learning of Mr. Rogers' death, expressed the opinion in a telegram of condolence to his widow, that his decease was undoubtedly hastened by personal sacrifice of his health to duty. That, in fact, epitomizes the life history of this remarkable man. Fidelity to trust and unwavering devotion to duty characterized his entire life.

He began his mining career in 1878, when he entered the employ of the old Eureka Mining Co., at Helena, Ala.



P. J. ROGERS

In 1886 he went with the Tennessee Coal, Iron and Railroad Co., now a large subsidiary of the United States Steel Corporation, then beginning the development of the Pratt mines coal field. He was prominently identified with this company until he accepted the presidency of the State Convict Bureau, doing this purely from a sense of public duty and at the solicitation of numerous personal friends.

Mr. Rogers was born at Speigners in Elmore County, Alabama, in 1856. He is survived by his aged mother, two brothers, three sisters, his widow, and four children—three daughters and one son.

No man who has been identified with the coal industry in Alabama has perhaps so completely earned and retained the confidence of his associates and coworkers. To the highest and the lowest he was the same quietly forceful unassuming gentleman. He will be mourned no less by the Governor and his associates in the state's work, than by hundreds of personal friends among the

miners of all classes whose friendship he highly treasured.

On the day of his death one of his old friends, a miner, said, "There was a man who was the same to the humblest worker in the mine (white or black) as to the highest executive of the company." The same day when crepe was placed on the closed doors of his office at the capitol, Tom, the negro janitor, begged for a piece of it, saying he wished to place it on the door of his home.

Among the wealth of floral offerings at his death, was a beautiful piece from the state convicts at the Banner mine, who gave this from their extra coal earnings. This was after all only another expression among many from those in the humbler spheres of life who loved him for his uniform consideration of all men in whatever position. Alabama's mining ranks lost a noble character in his too early death.

SOME INTERVIEWS

This with One Whose Point of View Has Been Changed by the War

Some men have such decided opinions about things that you cannot think of them without recalling their views. Such a man was J. Thomas Drake, manager of the V—— Colliery Co. I say "was," not because he has passed into the Great Beyond, but because I find that his views have changed so much. Although he still has opinions, they are those of the great majority of thinking people and no longer would impress one as being peculiarly his.

Having vivid recollection of former fruitless arguments with him, I decided to acquaint him with my mission without seeing him face to face; so I penciled a message on the back of my card and sent it in by the office boy. He came out of his office immediately, and gave me such a cordial greeting that I felt ashamed of myself.

"So you are doing your bit, too, are you?" he said. "It won't be long before every one connected with the coal industry will be in the saddle for service, and then dictators and investigators will drop into obscurity."

"Do you think"—he stopped me right there.

"I know. Any man who is devoting his energy today solely toward selfish ends, such as building up his business and increasing his bank account, should be and very soon will be classed as an undesirable. In the meantime he is absorbing much of the energy so badly needed in other directions." (This from a man who only a year ago defied the governor of our state because the executive dared to imply that the owner of a business should conduct that business as if his employees and the public had a voice in the matter.)

Now that Mr. Drake had of his own free will let down the bars, as it were, I felt at liberty to ask him a number of personal questions, even going so far as to remind him of the opinions he had formerly championed so persistently.

"If you run across a man in your travels now who still insists that because he founded his business and built it up he need not listen to the demands of his laborers," said Mr. Drake, "just ask him what that busi-

ness will be worth if we lose this war. Then ask him how much assistance he can give toward winning this war even if he devotes his entire time to that end.

"It was that thought that knocked the props from under my former convictions," he continued. "It amounts to this: The only men who can save my possessions to me are the men who are not conscious of my existence and mostly have no worldly possessions of their own, yet are offering their lives freely that the so-called rights of others—my rights—may be preserved.

"And you ask me what manner of man one must be who in the face of such facts can stand calmly by and argue for his rights, even threatening to shut down his mine if need be to gain his point?" (It took some courage to ask Mr. Drake that question.)

'I will tell you! I know him well. He is the man I used to be. He is the man who will tell you that the railroads alone are responsible for the coal famine; and if you question that and force him to qualify the statement, he will tell you that it is the miners—the miners and the railroads who deserve all of the censure. He can picture the shortcomings of every class of men with whom he is thrown in contact, but if you talk with him a week he will not so much as intimate that he has any failings of his own.

"He will tell you just what he predicted last year, and the year before that, and will assure you that every one of his predictions have come true; but if he should live a thousand years, not one suggestion could he make that would be of value to the men who are planning for the future. He could tell you of every mistake that Dr. Garfield has made, but not one recommendation for Dr. Garfield's future guidance would he hazard."

RECENT LEGAL DECISIONS

MINE PROP LAW INTERPRETED—Under a statute making it a coal operator's duty to furnish props to a miner on the latter having selected them, it is implied that the operator will supply props at a place convenient for selection by the miner, and if this be not done the miner's request for props is sufficient to charge the operator with liability for injury directly resulting from failure to furnish them. (Kentucky Court of Appeals, *Thacker vs. Shelby Coal Mining Co.*, 197 Southwestern Reporter, 633.)

DAMAGES FOR FAILURE TO DELIVER COAL—On inexcusable failure to make deliveries of coal under a contract of sale, the damages recoverable by the buyer are ordinarily to be measured by the excess of the market value of the fuel at the time and place when delivery should have been made above the contract price, plus transportation charges if the buyer was to bear them. (Kentucky Court of Appeals, *Log Mountain Coal Co. vs. White Oak Coal Co.*, 197 Southwestern Reporter, 659.)

MINE TROLLEY ACCIDENTS—In reversing judgment against a Utah coal-mining company on account of death of a miner who was electrocuted when he came in contact with a trolley wire maintained in the company's mine in operating an electric road, the accident occurring while decedent and other miners were leaving the mine after a day's work, the Utah Supreme Court holds that where a mine operator permits his employees to use the cars on such a railway in departing from their working places, there is a legal duty to use due care for their safety. But it is found that defendant in this case was not negligent in maintaining the trolley wire at a height of only about 5 ft. 7 in. above the

track, it appearing that to increase the height of the wire would require increasing the height of the tunnel, which would create a greater danger of fall of overhead material. Nor would a metal guard have been practicable since that would have increased the danger of contact with the current. And maintenance of wooden guards would have produced another peril, in the danger of overhead materials breaking them down, leaving exposed spines. An employer is under no legal duty to exercise more than a reasonable degree of care for the safety of his workmen, and the care required in a particular case is to be considered in connection with the instrumentalities, etc., in common use by others engaged in the same line of business, and found to be reasonably safe and suitable for their intended use. When a miner, as in this case, is acquainted with surrounding conditions respecting dangerous trolley wires, he assumes all risks which are obvious and presumably known to him. In this case, employees were amply protected by maintaining a man at the cars to warn them against boarding the cars until the current was first cut off. And a miner who boards a car in an unusual manner, as by climbing over the end instead of over the side, assumes the risk of being injured by coming in contact with an exposed trolley wire, the location of which he knew, or ought to have known. (*Whalen vs. Union Pacific Coal Co.*, 168 Pacific Reporter, 99.)

Boosting for Home

BY J. R. ALLARDYCE
Saginaw, Michigan

*Christmas is coming up again,
Buddy we must be spry,
And hustle the pick till the chips and chunks
Like sparks from an anvil fly.
There's a deal to do at home, old boy,
And the kids look up to me
Like little fish from a crystal pool
To the lunch which their round eyes see.*

*Give her the muscles and drive the drill
To the socket in solid coal,
Scrape her clean as a whistle, and give her the
seed—
Gee, that's a peach of a hole!
There's shoes for the children in that, and a dress
For the babe, and the old girl, too;
A bit for the butcher, and grocer, and then
The rest to see Uncle Sam through.*

*Last year I was foolish and gave it all
To the guy at the Eagle Bar;
I gave the sweat of my hide to the jay,
And the blood from that smarting scar.
I am wise today and I see the truth
That the preacher pounded in—
That a man shall not live to himself, and, by God,
I feel mean as the father of sin.*

*Give her another, Bud, hammer her hot,
And think of the pleasure to be
In the squaring of scores that are eating my heart,
With those who've been loyal to me.
Then hustle and hustle and stick to the task
Till the sweat gathers up in a foam;
I've been out for the world, but Christmas will
find
Me boosting for country and home.*

Wasting Anthracite by Culm Flushing

BY E. B. WILSON
Scranton, Pennsylvania

Conservation of coal has been a favorite topic for some years, although the critics fail to present a practical solution. One statement by the United States Bureau of Mines was to the effect that more anthracite was irredeemably lost by mining than was utilized. While this is undoubtedly an exaggerated statement, nevertheless there is waste to which I have called attention before, and it exists wherever culm flushing is practiced.

Some years ago, agitation over the surface settling in Scranton induced Ex-Mayor J. B. Dimick to take up the matter, and through his endeavor a Mine Cave Commission was appointed to investigate the conditions and formulate some plan that would correct them. The engineers of this commission advised flushing. The United States Bureau of Mines printed their report, sent engineers to Europe to investigate the methods adopted there, and further made a survey of lands adjacent to the Wyoming and Lackawanna valleys from which available filling could be obtained.

When one considers that anthracite mining has been carried on for three-quarters of a century, and that at the present rate of mining about 135,000,000 cu.yd. of holes are made annually, he will realize that the past and present excavations will require more than a modicum of material to fill them.

At the time of the commission's examination, and quite a number of years previous thereto, the refuse from coal breakers and from coal washeries was flushed by water into the mines, the object being not so much to support the surface as to dispose of the material about pillars in order that they might be withdrawn, an operation which is, in my estimation, equivalent to "Robbing Peter to pay Paul."

While culm flushing may furnish a temporary support to the surface, the aggregate relief afforded by the method, owing to the insufficiency of culm, is practically nil; consequently, any lasting support must come from the construction of artificial pillars or from flushing with country material, such as ashes mixed with sand and broken stone. As this material placed in the mines would add approximately \$1.50 to the cost of production, the so-called "coal barons" hesitate to tax the many for the benefit of the few although their action in the matter is not so construed by the citizens of the coal regions.

From an economical standpoint, the refusal to go to this expense is justifiable, for not all operators are mining under cities, and those not doing so would have an advantage of \$1.50 in competitive markets. Again, should all raise the price of coal \$1.50 to make market conditions equal, the bituminous coal operators would obtain a market which naturally belongs to the anthracite operators.

So far as I can figure out the matter, the general adoption of hydraulic filling may be placed in the minutes as deferred business, unless the state or Government furnish the funds, an idea which seems utopian, at least in the immediate future.

The use of fine coal for flushing being a mere trifle so far as surface support is concerned, and because it

has only temporary use in stiffening pillars, my suggestion that none be sent into the mines is augmented by the following facts:

Pea coal was not considered marketable until the late 70's, when the McClave shaking grate and the Wooten camelback boiler on locomotives were introduced. When a demand for this coal became general, smaller sizes of coal, shaking grates and artificial draft formed a combination by which large quantities of anthracite, hitherto wasted, became available for steam purposes. In the early 80's Eckley B. Coxe conceived the plan of the endless chain grate stoker, which is now being installed for the purpose of burning material similar to that flushed into mines.

It is well known that the fine pieces of coal resulting from the preparation of anthracite for market are purer than larger pieces, and although mixed with more or less fine bone and slate they are capable of producing an intense heat under boilers.

Numerous instances might be cited where such material is being used without any attempt being made to remove the impurities. In fact, during the past year the coal used to grade the old Pennsylvania gravity road, which transported the coal from the Lackawanna field in the early days of mining, has been loaded into wagons, hauled to the railroad and shipped away.

It has been stated that 12,000,000 tons of coal are used annually to generate steam at anthracite collieries, an amount which approximates the quantity of fine coal produced in the preparation of anthracite for market. Its use under boilers, therefore, will add materially to conservation, while its employment for supporting excavations is of little importance.

Cost of Living in United Kingdom

According to the *Labor Gazette*, an official publication of the ministry of labor at London, the increase from July 1, 1914, to Sept. 1, 1917, in the cost of living for a working-class family in the United Kingdom (including food, rent, clothing, fuel and light) is estimated to have been approximately 85%. The Cardiff and South Wales *Journal of Commerce* has estimated that the general wage rate payable at present in the coal fields of South Wales averages for all classes of labor 75% higher than that which was in force when the war broke out. There is considerable variation, however, in the rate of increase of wages for the different classes of labor in the coal fields. This publication states:

A day-wage timberman employed on the afternoon or night shift before the war earned £1 16s. 4d. (\$8.84) per week. He now gets £3 3s. 8d. (\$15.49), or an increase equal to 75%. A night hauler [driver] now gets £2 14s. 11d. as compared with £1 9s. 10d. (\$7.25) in July, 1914, an increase of 84%; while a laborer has in a similar way had his standard earnings increased from £1 3s. 8d. (\$5.75) to £2 6s. 9d. (\$11.37) weekly, or by nearly 100 per cent.

Since these statistics were prepared a further increase in wages to coal miners of 36c. per day has been granted. This represents an additional advance of 15 to 20% according to the class of labor, so that the total increase over wages that were paid at the outbreak of the war varies from 84 to 120%. So far as the coal miners are concerned the advance in wages since the outbreak of the war has been as great as or greater than the rise in the cost of living.



[Men of the coal industry who find it necessary to get to the national capital on business these days are invited to avail themselves of the facilities afforded by the Washington Bureau of "Coal Age," which is centrally located in the Metropolitan Bank Building. The bureau is in charge of Paul Wooton, who is in a position to be of material assistance to those who have business to transact with Government officials. Have your mail addressed care of "Coal Age," Room 703, Metropolitan Bank Building, Washington, D. C., while at the capital.—Editor.]

Essential Industries To Receive Fuel Preference for Thirty Days

Preferential shipments for thirty days in favor of the more essential industries have been requested by the Fuel Administration. All operators in Pennsylvania and Kentucky are requested to give preference in shipments in the following order: Government orders, railway fuel, domestic requirements, public utilities, steel plants, byproduct coke ovens, munitions plants. All operators in West Virginia and Virginia were requested to give preference in the following order: Government orders, railway fuel, Tidewater shipments for New England, domestic requirements, public utilities, munitions plants. Operators in Ohio, Michigan, Illinois, Indiana, Alabama, Tennessee, Colorado and Oklahoma were asked to make shipments as follows: Government orders, railway fuel, domestic requirements, public utilities, munitions plants.

A Sweeping Priority Order

Livestock, perishable freight, food and feed are to be given priority movement over coal, with the exception of that for the current use of railroads. A sweeping priority order to this effect was handed down Dec. 8 by Judge R. S. Lovett. In this order Judge Lovett, in the name of the President, orders and directs that on and after Dec. 12, 1917, and until further order, all common carriers by railroad in the United States shall give preference and priority in car supply and in movement to the following commodities, and in the order numbered:

1. Steam railroad fuel for current use.
2. Livestock, perishable freight, food and feed.
3. (a) Shipments of military supplies when consigned direct to the United States Government or the authorized officers of the United States Army, Navy or Shipping Board,

or to the Allies or the proper representatives thereof, destined to any cantonment, post or encampment, to any point of export for movement thence to Europe, to any arsenal or navy yard, or material to any shipbuilding plant under contract to the United States Shipping Board for the sole purpose of constructing vessels for that board.

(b) Other shipments for the United States Government, as the same may be authorized from time to time by the undersigned as necessary in particular cases, but only upon request of the United States Army, United States Navy or United States Shipping Board, through a designated officer or representative of the respective departments, located in Washington.

4. Coal to and for byproduct coking plants and not subject to reconsignment.

5. Preference and priority in movement only to coal for current use, but not for storage, consigned direct (and not subject to reconsignment) to hospitals, schools and other public institutions, retailers of coal for use in supplying domestic consumers only; and to coal, coke and raw materials for current use but not for storage, consigned direct (and not subject to reconsignment) to blast furnaces, foundries, iron and steel mills, smelters, manufacturers engaged in work for the United States Government or its Allies, public utilities (including street and interurban railways, electric power and lighting plants, gas plants, water and sewer works), flour mills, sugar factories, fertilizer factories and shipbuilders; also shipments of paper, petroleum and petroleum products.

This order will not affect Priority Order No. 2, dated Oct. 27, 1917, relating to open top cars, Priority Order No. 3, dated Nov. 2, 1917, relating to movement of coal from mines in Utah and Wyoming, and Priority Order No. 4, dated Nov. 22, 1917, and Supplement A thereto, dated Nov. 29, 1917, relating to shipments of cattle feed to points in Texas and New Mexico, issued by the War Priorities Board.

Licensed Foremen Will Issue Explosives

Operators from the Pittsburgh district, after several conferences with Bureau of Mines officials with regard to the interpretation of the Explosives Act, decided upon a magazine basis for issuing explosives. In this way all explosives will be issued to Austrian and other workmen through licensed foremen.

Close to 2500 persons have been vested with the power to issue licenses. All of the important mining districts have been provided with licensors. The number of licensors in each county ranges from one to twenty, according to local needs. The number probably will be greatly increased as it may become necessary to avoid inconvenience.

The preliminary organization of the machinery to handle the Explosives Act has been completed. This work was done by L. E. Young, of the University of Illinois, who is one of the Bureau of Mines consulting

engineers. The temporary organization having completed its work, Francis S. Peabody, the assistant director of the Bureau of Mines in charge of the Explosives Act, has placed D. D. Bush in direct charge of the permanent organization. Mr. Peabody has called in several volunteers to assist him in the work. They are D. S. Boynton, of the Byproducts Coke Corporation, of Chicago; W. H. Glasgow, of the H. C. Frick Coke Co.; Daniel Baker, Jr., of the Standard Lime and Stone Co., and E. A. Orem, of the DuPont Powder Co.

State inspectors to have charge of the enforcement of the Explosives Act have been appointed in 43 states. The appointments were approved by the President on Nov. 26. The inspectors were selected largely upon the indorsement of each state's Senators. These inspectors report to Van H. Manning, director of the Bureau of Mines. The appointees are as follows:

Edward L. Shaw, Phoenix, Ariz.; D. C. Sargent, Cordova, Alaska; Edwin T. Reaves, Little Rock, Ark.; Walter K. McAdory, Birmingham, Ala.; John M. Griffin, Madera, Calif.; Thomas S. Price, Longmont, Colo.; James E. McGann, New Haven, Conn.; Clarence E. Woods, Eustis, Fla.; Carlos H. Mason, Atlanta, Ga.; Lemuel T. Osborn, Mount Vernon, Ind.; John J. Hughes, Council Bluffs, Iowa; Edgar S. Elder, St. Maries, Idaho; William A. Compton, McComb, Ill.; Thomas S. Rhea, Russellville, Ky.; Isaac A. Broussard, Breaux, La.; Madison C. Bowler, Minneapolis, Minn.; Daniel F. O'Connell, Fitchburg, Mass.; Ellis S. Middleton, Pocahontas, Miss.; Albert E. Stevenson, Port Huron, Mich.; Walter L. Lampkin, Kansas City, Mo.; Jeremiah W. Farrell, Joliet, Mont.; Leon O. Tebbetts, Waterville, Maine; Edward D. Jackson, Buffalo, N. Y.; Nicholas Hughes, Paterson, N. J.; Andrew W. Bingham, Littleton, N. H.; William P. Porterfield, Fargo, N. D.; Charles F. Clark, David City, Neb.; Daniel A. McDonald, Carthage, N. C.; William N. Campbell, Medford, Ore.; Jasper S. Kinslow, Columbus, Ohio; Fred Rains, Muskogee, Okla.; John W. Rittenhouse, Scranton, Penn.; Francis E. Sullivan, Providence, R. I.; Charles B. Watters, San Antonio, Tex.; Albert M. Leach, Clarksville, Tenn.; David C. Dunbar, Salt Lake City, Utah; Park H. Pollard, Proctorsville, Vt.; Martin Williams, Pearisburg, Va.; Walter G. Ronald, Seattle, Wash.; E. M. Gilkeson, Parkersburg, W. Va.; James A. Berry, Basin, Wyo.; William Banks, Columbia, South Carolina.

Inadequate Transportation Facilities Limit Coal Output

A decrease of 10.8 per cent. was registered in the coal production during the week ended Dec. 1, as compared with the production of the week preceding. The fact that Thanksgiving was observed as a holiday in most districts is largely responsible for this decrease. Production for the week ended Dec. 1 was 10,273,014 tons. Coke production for the week was 585,773 net tons, a decrease of 8.8 per cent. Shipments of anthracite were 37,533 cars, a decrease of 12.8 per cent. These figures were compiled by C. E. Lesher, the geologist in charge of coal statistics for the United States Geological Survey. Commenting on the situation, he says:

It will be noted that losses due to lack of cars have been increasingly severe in the past month, rising from 11.5 per cent. in the week of Oct. 20 to 14.8 per cent. for Oct. 27, 15.3 per cent. for Nov. 10, 19.4 per cent. for Nov. 17, 20.2 per cent. for the week ended Nov. 24.

Inadequate transportation facilities thus remain overwhelmingly the dominant factor limiting the output of soft coal. Throughout Illinois, Indiana, Ohio and eastern Kentucky the toll exacted by shortage of cars increased in severity. Car shortage in Ohio was especially severe; for the state as a whole losses due to this factor amounted to 30.8 per cent. of the capacity. Car shortage became more acute in the Pocahontas and New River fields of West Virginia, where losses due to this factor rose from 19.5 per cent. in the week ended Nov. 17 to 20.6 per cent. Even

the Cumberland-Piedmont field, ordinarily well supplied with cars, lost 15.3 per cent. of its full-time capacity because of inadequate transportation.

Western Pennsylvania, however, recovered in part from the extreme depression of the week before. Losses due to car shortage fell in the Pittsburgh district from 28 per cent. to 22.1 per cent. of the full-time capacity. Conditions in central Pennsylvania and the Winding Gulf, Junior-Phillippi and Fairmont regions of West Virginia underwent little change. Losses due to car shortage remained severe in the high-volatile fields of southern West Virginia, where operators failed to realize 36.4 per cent. of their possible output through lack of cars alone.

Fuel Administration Insists on Co-operation

Coal dealers who refuse to coöperate with the Fuel Administration in relieving the present situation are not to be allowed to have coal. Shipments intended for such dealers are to be diverted to those who will coöperate with the Fuel Administration. The Fuel Administration's policy in such cases is set forth in the following telegram sent to a firm of coal dealers in a Pennsylvania city, which was reported to have refused to work with the state fuel administrator:

Administration is advised you refuse to coöperate with Federal Fuel Administrator. If this is the case, administration will take steps to have all coal shipped to you diverted to other local dealers who are willing to coöperate with this administration in relieving whole situation. It is not a time when dealers can run their own business as they see fit, and coöperation on part of dealers must be given if efforts of this administration are to be successful. Unless advice that you are willing to coöperate is given by 4 o'clock this afternoon we will arrange to have all coal now in transit diverted to other dealers in your city.

The firm hastened to reply that its attitude had been misunderstood and that it was perfectly willing to work in harmony with the Fuel Administration.

Co-operative Industrial Committees To Be Supplanted by Individuals

Advisory committees in the organization of the Council of National Defense are to be replaced by individuals, from each industry, who will become Government employees and who will act as expert advisers to the council. The council recommends that the industries appoint their own committees. "This action is taken," Director Gifford says, "to discontinue the embarrassing situation wherein the members of the present committees are apparently called upon to act both as Government agents or advisers and at the same time as representatives of the industries. In dissolving the present coöperative committees of industry, which were appointed by and under the direction of the council, the action is taken only with the highest praise and thanks for their splendid and indispensable work and at the same time with the hope that representative committees of the industry will be formed by the industries themselves at the earliest possible moment. The establishment of such committees, formed so as to entitle them to speak for their entire industries, will render immediately available valuable sources of information upon which the Government can draw in connection with the countless business and industrial problems attendant upon the conduct of the work necessary for the prosecution of the war."

The Labor Situation

General Labor Review

The important event of the week was the decision of the Supreme Court on the well-known Hitchman case. This says that the United Mine Workers of America had no right to make deliberate efforts to unionize men who were working for a company which employed "its men upon the terms that they should not be members of the United Mine Workers." An account of this decision is given in another column.

Last month the Hitchman Coal and Coke Co. instituted contempt proceedings for alleged violation of the injunction against 16 officials of the international union, including President Frank J. Hayes. This action is still pending, and the company's counsel threatens to press the matter. The court granted the defendants 60 days in which to present their case.

It would seem best for both union and company to suspend activities against one another during the war, the union refraining from interference with the coal company and the company declining to press its suit. There are bigger matters on hand than even this decision, which can well await the outcome of the war for democracy.

FOREIGNERS GIVE UP LONG-ESTABLISHED HOLIDAY

The mine workers in the anthracite region continue to work with assiduity and patriotism. The only news found worthy of transmission from that silent body of workers had relation to the Feast of the Immaculate Conception. Virtually every colliery worked on that day, masses being said at 5 a.m. to enable the devout to perform their religious duties. The coal operators, union leaders and officials of the Roman Catholic Church had made appeals to the mine workers to observe the day in this manner. The Pennsylvania Slavish Roman and Greek Catholic Society has pledged itself to restrict the attendance of its members at funerals during the war to six pall bearers because the need for miners in the anthracite region is acute.

Pennsylvania is in general quiet. At the close of last week it was announced that the Broad Top field had made an agreement by which the wages of miners would be reduced after Apr. 1 to the general level of wages in central Pennsylvania. The day labor rate is to remain the same as in the surrounding district.

In Ohio the miners desire to pay no more for powder than is paid in the State of Indiana. No one can see why, when powder is sold immensely below cost, the miners should seek to get the price reduced still further. The miners in Ohio now pay the same price as is paid in Pennsylvania. The Indiana price is 75c. a keg lower. John P. White has been trying to get the difficulty settled, and for that purpose has been holding a conference with the mine workers and operators at Cleveland.

COAL MINES CAN'T WORK IF RAILROAD IS IDLE

A representative of the United States Fuel Administration's advisory board in Arkansas has been dispatched from Little Rock to Ft. Smith, Ark., where a number of coal mines are affected by a strike of employees of the Ft. Smith Light and Traction Co. Telegrams to the Fuel Administration stated that the strike went into effect Dec. 10 and at once tied up the operations of the light and traction company. It also shut off the power supply to a number of industrial plants and to the coal mines in Sebastian County.

The Osage (Kansas) operators, with their chief representative F. W. Lukins, and the Osage mine workers, with Alex. Howat, the president of the Kansas district, as principal spokesman, are preparing to discuss their difficulties

with Fuel Administrator Garfield. The operators believe that the increased rate granted the miners will make operation impossible as soon as summer comes and do not feel they can afford to operate in the interim at the price set.

Alex. Howat was reelected president of District 14, the State of Kansas, by a vote of 125 locals. Thomas Harvey, secretary, and August Dorchy, vice president, were also reelected. The vote was light throughout the district. Howat has not shown much disposition to submit to the orders of the Fuel Administration or to the requests of the international body of the United Mine Workers. Hence his reelection is distinctly ominous. The Kansas mine workers should have done something better than merely abstain from voting.

The mine workers intend to contest the verdict for \$600,000 awarded Franklin S. Bache, which they claim is fairly riddled with errors. The union tries to regard the whole matter as something merely technical and represents that Bache deserves his fate. However clever the press agents of the union may be they cannot wash away the damning evidence of murder and arson which accompanied the activity of the union in the Hartford valley.

Broad Top Region Is Satisfied

Operators and miners of the Rocky Ridge district, comprising what is known as the Broad Top field in Pennsylvania, have reached an agreement in their wage controversy which had reached a point where the suspension of operations at the mines was threatened. The United States Fuel Administration brought representatives of both sides to Washington with the result that the matter was satisfactorily adjusted.

The agreement signed provides that the day-wage rate of the men shall remain the same as in other central Pennsylvania fields. The mining rate will be 10c. above that in other central Pennsylvania fields, or \$1.11 $\frac{3}{5}$ per ton. The latter rate is to be effective until Apr. 1, when it is to be withdrawn, making a new wage rate on the basis of the rest of the central Pennsylvania territory. On Apr. 1 the rate will be \$1.01. The agreement affects 2300 miners in Bedford and Huntingdon Counties.

May Not Conspire Against Capital

On Dec. 10 the Supreme Court upheld the well-known injunction of Judge A. G. Dayton against the employees of the Hitchman Coal and Coke Co., of Wheeling and Benwood, W. Va., and the Eagle Glass Manufacturing Co., of the same state.

The majority of the court held in the Hitchman case that the officials of the United Mine Workers of America "deliberately and advisedly selected that method of enlarging the union membership which would inflict injury" upon the company and its loyal employees and it declared that its "conduct in so doing was unlawful and malicious." In the opinion of the court "it is erroneous to assume that all measures which may be resorted to in the effort to unionize a mine are lawful if they are peaceable—that is, if they stop short of physical violence or coercion through fear of it." "The purpose of the defendants to bring about a strike at the mine in order to compel plaintiff, through fear of financial loss, to consent to the unionization of the mine as the lesser evil was," says the court, "an unlawful purpose." Justices Brandeis, Holmes and Clarke rendered a dissenting decision.

The finding of the majority is as follows:

The Supreme Court holds, that the plaintiff was acting within its lawful rights in employing its men upon the

terms that they should not be members of the United Mine Workers; that, having established this working agreement between it and its employees with the free assent of the latter, the plaintiff is entitled to be protected in the enjoyment of the resulting status as in any other legal right; that the fact that the employment was terminable by either party at any time made no difference, since the right of the employees to strike or to leave the work gave no right to defendants to instigate a strike; that plaintiff was and is entitled to the good will of its employees, precisely as a merchant is entitled to the good will of his customers, although they are under no obligation to deal with him; that the value of the relation lies in the reasonable probability that, by properly treating its employees and paying them fair wages and avoiding reasonable grounds of complaint, plaintiff will be able to retain them in its employ and to fill vacancies occurring from time to time by the employment of other men on the same terms, and that defendants could not be permitted to interfere with these rights without some just cause or excuse.

MINERS HAVE RIGHT TO FORM LABOR UNIONS

By way of justification or excuse, defendants set up the right of workingmen to form unions and enlarge their membership by inviting other workingmen to join. The opinion of the court freely conceded this right, provided the objects of the union be proper and legitimate, which is assumed to be true in a general sense, with respect to the United Mine Workers of America.

But the court holds that it is erroneous to assume that this right is so absolute that it may be exercised under any circumstances and without any qualification; that in truth, like other rights that exist in civilized society, it must always be exercised with reasonable regard for the conflicting rights of others, according to the fundamental maxim "So use your own property as not to injure the rights of another."

MIGHT NOT TRY TO BREAK HITCHMAN CONTRACT

Hence, assuming that the defendants were exercising the right to invite men to join their union, nevertheless, since they had notice that plaintiff's mine was run nonunion, that none of the men had a right to remain at work there after joining the union, and that the observance of this agreement was of much importance and value both to plaintiff and to its men who had voluntarily made the agreement and desired to continue working under it, the defendants were under a duty to exercise care to refrain from unnecessarily injuring plaintiff, yet they deliberately and advisedly selected that method of enlarging the union membership which would inflict injury upon plaintiff and its loyal employees, by persuading man after man to join the union and, having done so, to remain at work, keeping the employer in ignorance of their number and identity, until so many should have joined that by stopping work in a body they could coerce the employer and the remaining miners to organize the mines, and that the conduct of defendants is so doing was unlawful and malicious.

GOMPERS ATTACKS DECISION AS UNWARRANTABLE

According to the "New York Times," Samuel Gompers, president of the American Federation of Labor, declared the decision was "far-reaching and unwarrantable." He said:

To hold that the United Mine Workers of America is an unlawful organization or that it is a conspiracy to hark back to the days when employers were monarchs of all they surveyed and their employees were servants or slaves. The miners' union undertook by perfectly lawful methods and means to reach the unorganized and underpaid miners of West Virginia so that they might be treated as men and as citizens, with the responsibility of maintaining families upon an American standard.

At the time when the injunction was issued John Mitchell was president and William B. Wilson secretary-treasurer of the United Mine Workers of America. The former is now the Food Administrator of the State of New York. The latter is a member of the President's Cabinet, and these men with others of equal standing and character are stigmatized by the court as conspirators.

President Wilson has justly declared that society has given its sanction that the eight-hour workday is justified. It is to bring light and hope and patriotism into the lives of the workers for which we are organized and are organizing and federating the toilers of America. And we shall go on to reach our goal for a better concept of not only political but industrial democracy.

Kansas Mines May Be Federalized

The Kansas Fuel Administrator, Emerson Carey, has granted the miners of Osage County, Kansas, their demand for 50c. additional per ton. On Dec. 3, after the award was made, the operators of the district met in Kansas City and decided that they could not afford to operate the 12 association mines, all of which have been closed since July 21, when the miners made their demand. They appealed the Carey decision to Fuel Administrator Garfield.

The Osage County coal is thin, and the miners demanded a scale 50c. per ton higher than that paid in the Southwest so that their daily earnings might be brought up to those of their fellow workmen in nearby fields. The operators argue that their stand in the market is decided not by the wage rate but by the price paid for rival coals where the wage rate is lower because the coal is thicker.

The wage rate is quite high. With the 50c. additional it will be \$2.58 a ton in the northern part of the county and \$2.52 in the southern part. The selling price, which is also raised 50c. per ton, will reach a maximum of \$4.95 a ton.

COULD MINE COAL AT PRICE FOR A WHILE

The operators declare that they might "break even" during the next 60 days operating under the new scale of wages and prices. They claim, however, that they could not remain in operation thereafter in competition with southern Kansas coal, which is mined at such a much lower price that it sells at \$1.20 a ton less than Osage coal. The operators have notified Administrator Garfield in their appeal that the reopening and cleaning up of the mines will cost from \$200 to \$1000 a piece, for the mines have been idle for more than four months. This additional expense will make operation more costly. They assert they are not financially able to operate these mines at a loss.

The Lever bill is believed to give the Fuel Administrator power to take over the mines in case the operators do not agree to abide by the Administrator's decision. So Government operation in this field may possibly be the outcome.

Another phase of the Osage County controversy is the fact that though the association mines have been idle miners have combined to operate some of the abandoned mines in the territory in an inexpensive manner. It is alleged that they have made no effort to comply with the state mining regulations and that the co-operators are not liable to one another in case of an accident. There are two mines operated by labor exchanges.

It was on the wages paid by these mines, mostly operated by miners themselves, that the state administrator based his decision, explaining that the wages he fixed were the same as those paid by the mines now in operation. This, the operators in the Southwest Interstate Coal Operators' Association claim, is not a fair comparison, as their operating expense is greater due to their adherence to state and Federal regulations.

SOUTHWEST ASSOCIATION WITHDRAWS ITS HELP

As long as the mine operators awaited Carey's decision the Southwest association of operators made monthly allowances to them for keeping the mines pumped out and in fair condition. Commissioner Carey ruled that this payment should discontinue and the operators stand any loss that may result from the closed mines.

The mine operators expect an early decision from Dr. Harry Garfield, Federal Fuel Administrator. Their attorneys have advised them that the Kansas commissioner overstepped his authority in setting the wage scale above that paid in other fields, and they are firm in their stand against reopening the mines under Mr. Carey's ruling.

The situation is more interesting than pressing. The 12 Osage mines have filled the public eye somewhat more largely than their importance warrants. In 1915 they combined to put out 88,000 tons, barely a month's work for a good mine. But the 588 men in the county must not be entirely overlooked. They might well be the crystallizing center for a larger movement, but if not, their idleness or activity is not a matter of vital interest.

Editorials

WITH patriotic fervor, Francis S. Peabody, the chairman of the Federal Committee on Coal Production, urged at a recent meeting of the Coal Mining Institute of America the need for efficient cleaning of coal during the war. He well pointed out that it had an important bearing on the operation of the fleets of the United States and its allies. A difference of a few per cent. in the quality of the coal supplied might mean much to a battleship in action or a troopship chased by a submarine.

Nor did he overlook the fact that the capacity of the boilers of the country is rendered inadequate when impure coal is supplied, but in this connection he did not mention the great waste in transportation that is involved in the carriage to market of worthless or inferior material or the loss in labor in stoking when rubbish which is labeled fuel but in large degree is noncombustible has to be placed on the fire, handled on the grate bars and removed as ashes.

Of course, there are some reasons, more or less adequate, to justify the sending to market of impure coal. The operator is not diluting coal with rubbish, as some assert. He is only saving himself the expense and labor of removing it. He is not profiting by the impurity he sells. He pays the miners as much for it as he does for pure coal. If he throws it away, it is a dead loss to him. The talk about dishonesty is in large part far more dishonest in thought than the sending of impurity to market is dishonest in act.

The dewatering of milk produces cream. To sell milk that is not dewatered is not dishonest. It is only the addition of water to milk that constitutes a dishonest act. So likewise the removal of slate and bone from the coal produces what we know as prepared coal. To sell coal that is not prepared is not dishonest unless prepared coal is specified by the consumer. What would be dishonest would be the addition of impurity to coal.

If an equal selling price were put on cream and milk, no cream would be sold. The putting of an equal price on prepared and unprepared coal tends similarly to eliminate prepared coal from the market. The man who prepares his coal, casts away part of his product and receives no compensation in return for it, and has in addition the not inexpensive labor of handling the coal during that preparation.

* * *

THE material thrown away in this handling is not wholly without fuel value, but is largely a mixture of coal and slate known as "bone." It has always vexed the soul of the conservationist to see the waste of this material. He could not see why the heat values it contained could not be put to better purpose than to start occasional fires in slate piles or under railroad tracks. During the war, it seems still more ill advised to tax our shortened supply of labor by employing men to cast out fuel which men have mined and cars have transported to the tipple.

It would, of course, be better to burn the bone (and for that matter the pyrite) at the mine plant. Thus no more would be expended on the transportation of it than necessary. However, this presupposes that the mine plant is equipped to handle this exceedingly low-grade fuel, this skim milk of the coal industry. A little of it any one can use, but skim milk is somewhat hard to rely on as a steady diet.

There are two classes of cleaning—preparation within the mine and preparation without. Both take some time. The miner who scrupulously casts out refuse is apt to limit his output by so doing, just as much as the company will reduce its output if with the shortage of men it attempts to run slate pickers, jigs and spiralizers.

It appears true, however, that the larger interests of the country are better served by careful elimination of bone and sulphur—otherwise why has it been profitable to make that elimination in the days of competition? The only condition that would justify less care in the elimination of impurity would be a decrease in haul due to careful districting of the coal business. Where coal has less value added to it by transportation the question of impurity will not loom so large. Where coal is worth \$2 a ton at the mine 20 per cent. of impurity is represented by 40c. Transported to a distance the coal may be worth \$7 a ton, and the 20 per cent. of impurity will represent \$1.40, of which \$1 will be transportation value. Clearly this is a waste of transportation which we cannot at this time afford.

* * *

IF, MOREOVER, owing to impurity, the boilers of a plant cannot do the work required of them, the loss in output, economy and effectiveness will have to be added to the transportation loss. Competition now no longer regulates preparation. Furthermore, as all qualities of coal sell for a common price, preparation has become unremunerative. As a result the producing concerns are less stringent in their demands on the miner and less active in using the preparation plants established at their mines. Concurrently, the miner himself cannot be forced so readily to produce a clean product, nor has he the time on his hands in which to labor at the keeping of it clean. Moreover, pooling arrangements remove what has always been the main reason for the operator's willingness to clean coal—namely, the maintenance of his standards and of his reputation.

When every man shipped his coal to market under his own name, he was disposed, even at some loss or at least some decreased gain, to build up his good name by the shipment of the best of coal. But when coal is shipped to a pool or shipped without name to an unknown purchaser there is absolutely no incentive to ship a pure article except the incentive afforded by patriotism.

Now, patriotism is not by any means a negligible factor, but it is apt not to be as powerful as it might be when the demands it makes are uncertain. If A ships coal to B, and does not know whether B is engaged in

a war-worthy enterprise, how far does he feel obligated to spend lavishly in the preparation of his coal? If he ships it over a railroad which he feels is poorly conducted, he is apt not to feel his obligation to assist in its effective working by scrupulous attention to coal preparation. The operation of patriotism in such cases is uncertain and indirect.

* * *

IT IS the wish of the Fuel Administration to establish some fuel standards for the benefit of the public, to help in the prosecution of the war and to award the patriotic coal producer; but the Administrator well says that the problem is a hard one. The work of maintaining standards is appallingly difficult and expensive. No wonder he shrinks from it.

Yet one provision could be made. Cars could be labeled with the name of the producer. The railroad's objections to that practice might be overcome. The principal objection would be that prewar trade conditions would be disturbed permanently. The consumer finding other coal as good as he had formerly used, might, after the war, seek another dealer and trade would be drawn away from the old channels. The better coal and better prepared coal would wean away trade from mines with poor or poorly prepared coal.

But that is hardly a reason for failing to label coal properly. The good coal and the well prepared coal are entitled to the preference, and it is the least we can do to give such preference to the worthy. In normal times the producers of the best coal get not only preference, but a somewhat higher price to pay them for their pains.

Whatever is done, it is the duty of every operator and every miner to prepare the coal in the manner suited to transportation requirements. In fact, with car shortage the freight rate should not be the sole point considered; nor should the freight rate and the boiler capacity of the consuming plant together decide the matter, for there is today no room for slate in railroad cars. The motto of the operator should not be "Any kind of coal so long as we can fill our daily quota of cars," but rather this: "Coal must be supplied such as will best serve the national purpose."

The problem is complex, and every one must answer it for himself as best he may in the interest of that country for which his neighbors, and mayhap his own kin, are giving their lives. His personal interest must be a secondary consideration.

Contrasts in the Coal Industry

ONE cannot but be impressed by the contrast between the methods of mining coal and the methods of manufacturing coal into coke. The mammoth installations at byproduct coke ovens contrast with the inadequate equipment in the digging of coal.

As we arrange our mining work today the machine takes much of its time getting to the work and then in getting ready to perform it. If we had everything arranged so that continuous operation was possible, much labor and much time would be saved. There is absolutely no reason why coal mining should not be conducted in this continuous way and why the machine

doing it should not be almost as large as a coke pusher. It could even be so built as to support the draw slate over the machine as it traveled along the room face, a series of pneumatically operated props supplying the necessary roof sustentation.

When the amount of work performed by each man is regulated by the speed of an armature, there will not be any hard workers or any slack workers. We shall have competent and incompetent workmen, but no speedy or do-less individuals. Under such circumstance there will be no need to take exception to day labor. The day worker will do his part without excessive strain.

Moreover, there will be little need for supervision, because the workman will be a competent mechanician, interested in his work, paid a large wage and quite capable of supervising himself, or else the machine itself will have a mechanical engineer in charge of whom the same might be said. In any event the tonnage of the machine will tell the tale, and if its operator does not produce results another will be sought.

Perhaps the coal will be shot down, but it is more likely that the pressure on the deeply undercut coal will break it down as soon as spragging support is removed. But in the final arrangement the coal may be removed by mechanical means. As for loading, it will be done by a machine, perhaps the same machine as does the cutting. A track will be provided back of the cutter and loader, and it will be connected with the main mine roadways at both ends so that cars can be moved continuously past the point of loading and filled without any delay. The roof over the track will also be supported by pneumatic props.

We may be a long time reaching such a complete change in methods. It is certain that we will be if payment by the ton is continued and the machine is to be favored only a few cents a ton over and above the regular mining prices. A concern which will take all the risks of introducing such a labor-saving device will be entitled to find in it not merely a labor-saving but a wage-saving provision also. Unfortunately, too many machines save an immense amount of labor but only a minimum amount of wage.

Short of such a mammoth installation there are many partial plans which may be tried. The important matter is that when tried the profit of success will largely go not to the man who merely accepts the improvement, but to the man who initiates it, pays for the expensive experiments and risks his money on its success.

Until that time arrives we must expect that little progress will be made toward methodical and scientific operation. Meanwhile, the long arm and the strong arm of the piece worker will remain the great desideratum of the coal business. At present some people cannot see any hope to get cheaper coal except in the speeding up of the workman by bonuses and encouragement—a merely temporary expedient liable at any time to suffer defeat. The real hope of the future is on a system of payment that will enable the operator to retain a large part of the profits of improved machinery and to assure that such machinery will be continuously developed. Incentive, as ever, is the great revolutionizer; without it neither mine operator nor mine worker will make any real progress in economical mining.

New Apparatus and Equipment

"Simplex" Gage-Glass Guard

The device shown in the accompanying illustration is a new, patented safety guard, which entirely removes the dangers of being painfully scalded by escaping water and steam, or mutilated by sharp pieces of flying glass when renewing broken water-gage glasses.

This device may be easily and quickly applied to any type, size or make of water gage in use and is a positive and efficient preventive against a common and dangerous kind of accident. No one realizes the potency of these dangers so keenly as the engineers or firemen whose duty it is to renew the broken gage glasses.

The device is simple, consisting of a nonrusting semi-cylindrical shutter, rotating in brass semicircular tracks, one mounted at the top and one at the bottom of the water gage. These tracks are concentric with the gage glass itself and are attached by means of screws to the gage-glass rod brackets after removing the rods.

To this shutter is attached a piece of strong, solid, braided white cord, which passes through an eye on the outer periphery of the upper circular track, and from there extends to a point convenient to the fireman.

When a gage glass breaks the fireman reaches for

the cord, pulls it, and the circular shutter moves through half a turn, thereby deflecting the escaping water and steam, and making it possible to shut off the valves on the gage cocks without being burned.

When this has been done another quarter turn removes the shutter from its tracks, and it drops out of the way sufficiently to enable the fireman to renew the broken gage glass. After renewing the glass, the shutter is put back into its tracks in the guarding position.

The valves on the gage cocks are then reopened and in case the gage glass bursts again while this is being done, the fireman is absolutely protected from escaping steam and flying glass. If all goes well, the shutter is then set to its original position ready for another emergency. When in this, its normal position, the shutter forms an excellent reflector, making it easy to read the water level from any position. The entire device, with which is furnished full instructions for installing, can be attached, ready to operate, in 15 min. The price of each device is \$5 net, f.o.b. Springfield, Massachusetts.

Descriptive literature can be obtained by writing to Charles E. Torrance, general agent for the Simplex Safety Boiler Gage Glass Co., Room 210, Myrick Building, 29 Worthington St., Springfield, Mass.

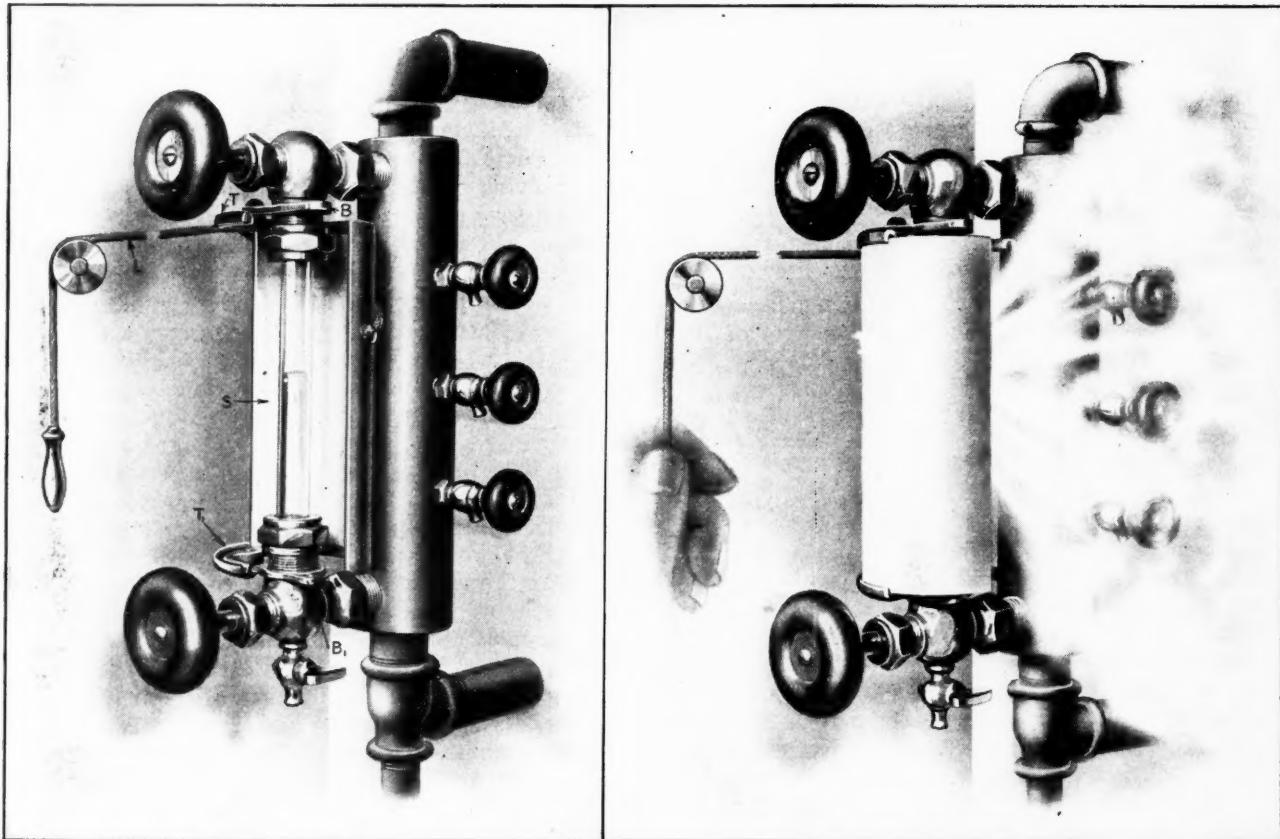


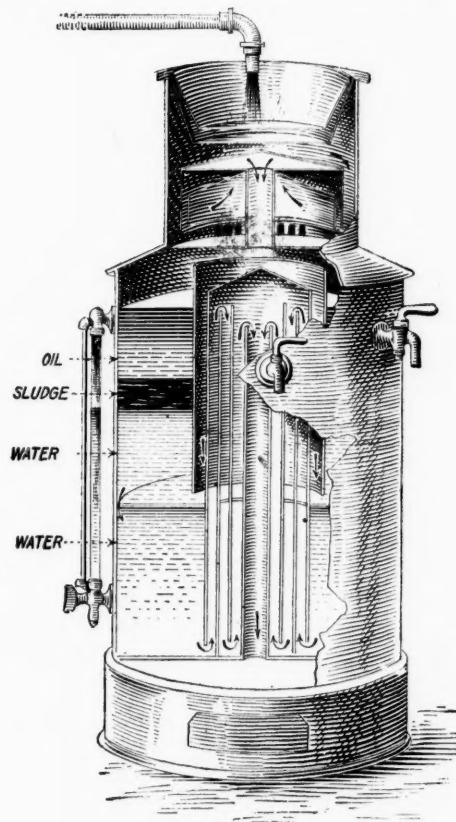
FIG. 1. GUARD IN RUNNING POSITION

FIG. 2. GUARD SWUNG TO PROTECT THE FIREMAN

Ten Winkle Oil Reclaimer

A device for saving waste oil and restoring its mineral constituent is being made by the Ten Winkle Oil Reclaiming Co., Chicago. The reclaimer operates by gravity, depending on screens and the reversal of flow through water to remove the heavier impurities and the passing of the foul oil through its own slimes to complete the purification.

Waste oil from separators or drips is introduced into the double strainer at the top of the device, passing through to a hood immersed in water up to the base of its conical top. The oil flows down around the sides of the hood, passes through openings in the bottom into the interior, then through a fine-mesh conical screen and the water to the overflow at the center. From the overflow the oil drops on a hood in the lower compartment and is guided downward between con-



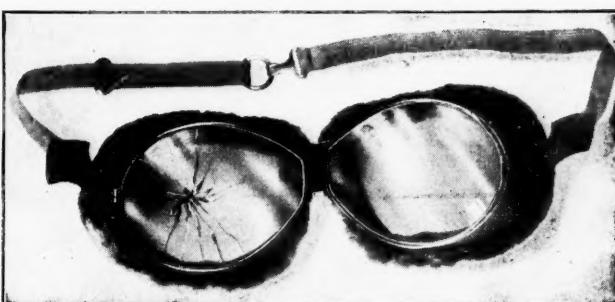
SECTIONAL ELEVATION OF THE RECLAIMER

centric cylinders to a horizontal diaphragm. Here the oil passes through openings at the bottom of the vertical division wall, spreads out on the diaphragm and rises through the water. Any addition to the water may pass down around the edge of the diaphragm through the series of seals to the overflow at the center.

By the time the oil reaches the diaphragm, the foreign matter heavier than water has been separated. Those impurities lighter than water are caught in the film of slime that forms between the surface of the water and the purified oil above. Outlet cocks are provided to draw off the purified oil to reduce the quantity of slime when its collection exceeds the requirements. Provisions are also made for the removal of the heavier impurities from both upper and lower compartments.

"Resistal" Safety Lenses for Goggles

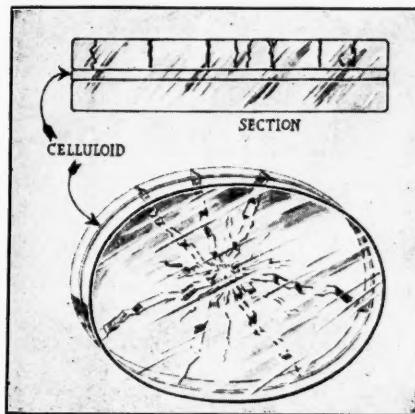
Mining men who advocate the safety-first idea will be interested in a new "crystal" that has been developed for use in goggles and masks worn by workmen who are exposed to the constant hazard of flying chips or specks, dust, gas, or excessive heat and light which jeopardize their eyesight. The feature of the crystal is its remarkable resistance to breakage, its strength being such that it will stand up even under a hammer



ONE LENS CRACKED, BUT INNER SURFACE INTACT

blow, while even on cracking there is no accompanying shower of glass chips and splinters to harm the eye of the wearer.

"Resistal" is the trade name of the glass which has been developed by the Strong Kennard and Nutt Co. of Cleveland, Ohio, and is used in the manufacture of these goggles. The construction is made plain by the accompanying sketch. It comprises two layers of perfect optical glass, which may be either flat or curved, with a layer of celluloid interposed, the whole being welded—not cemented—into a solid mass. The result is a crystal for which is claimed every virtue of the ordinary glass with none of its dangers or drawbacks,

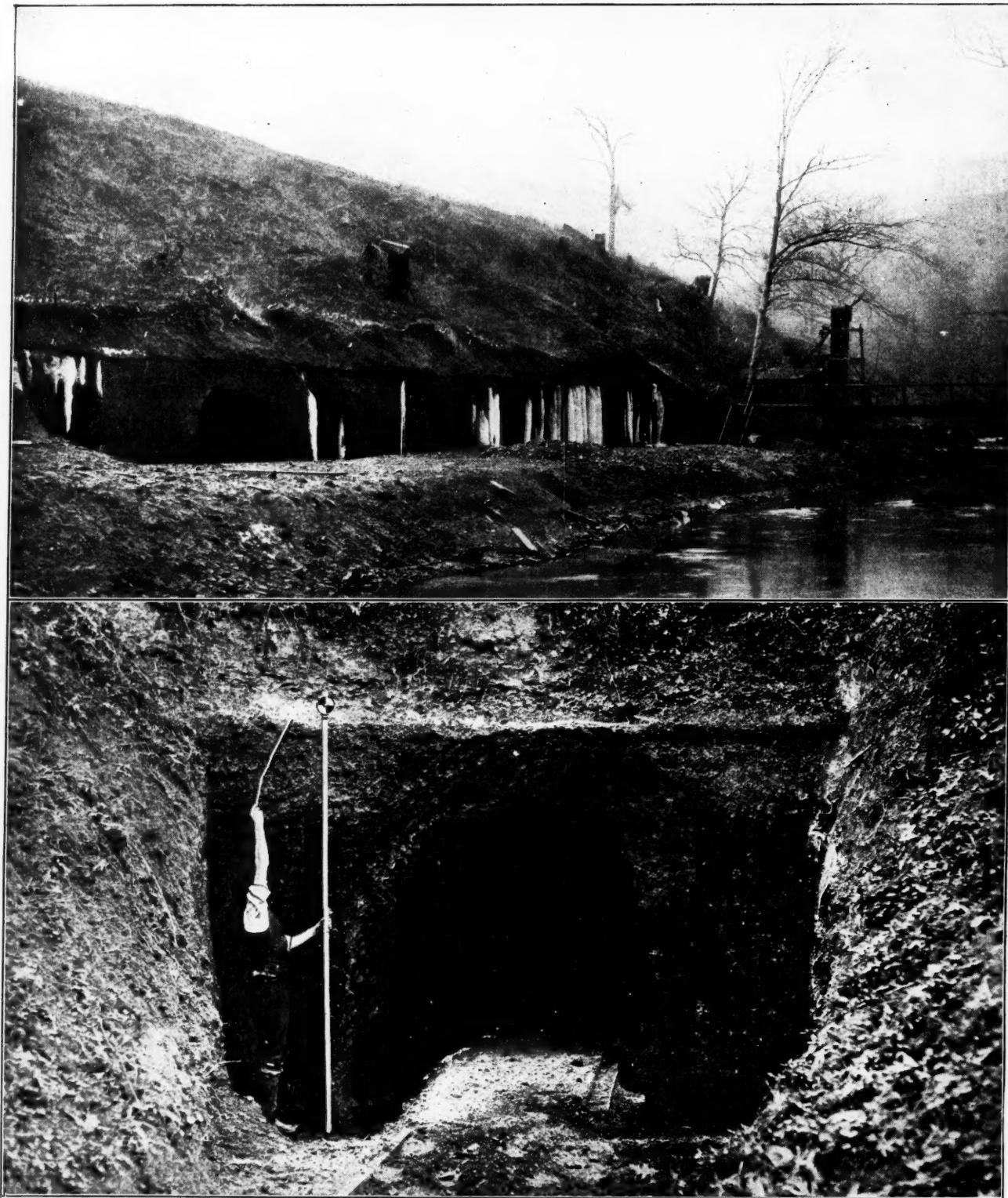


ENLARGED VIEW AND SECTION OF BROKEN LENS. SHOWING SAFETY FEATURE

having all of the strength and safety features of the celluloid goggle but, unlike celluloid, being unscratchable, rigid and fireproof. Neither is it affected by water, heat or cold, and the celluloid layer provides a heat-insulating medium which prevents "clouding up" due to moisture condensation.

As a testimonial of their worth is advanced the fact that "resistal" goggles have been adopted for the needs of the Aviation Corps, U. S. Army, while from the same quarter the makers have received orders for a large number of crystals for military purposes.

Snapshots in Coal Mining



VIEWS ALONG BINGAMON CREEK, EAGLE DISTRICT, HARRISON COUNTY, WEST VIRGINIA;
SITE OF CONSOLIDATION COAL CO.'S MINE NO. 88

Above—Several drift openings just above water level. Below—A drift opening, showing thickness of seam

Discussion by Readers

Clearing a Heading of Gas

Letter No. 3—It is hard for me to understand how a fireboss could hope to remove a body of gas accumulated at the face of a heading, by hanging a canvas on the return airway 90 ft. back from the face, as stated in *Coal Age*, Nov. 10, p. 823.

Assuming that a current of from 3000 to 5000 cu.ft. of air was circulating in this heading, a line of brattice extended to within 3 ft. of the face would undoubtedly move the gas. If the brattice was properly built and extended from the last crosscut to within a few feet of the face and, as stated in the inquiry, "this did not seem to clear away the gas," the air must have found some other route unbeknown to the fireboss.

In order to determine what effect the hanging of the canvas in the return airway would have upon the water gage and the fan, it would be necessary to know the quantity of air passing. As suggested in the reply to this inquiry, obstructing an aircourse would naturally increase the reading of the water gage and the fan would run a little faster. Further than this it is impossible to state.

OSCAR JONES

Worley, Ky.

Reducing Costs in Handling Coal

Letter No. 1—The editorial in *Coal Age*, Nov. 24, p. 897, relating to the alleged suggestion of Henry Ford that "there is plenty of coal in the mines, but no adequate scientific means for getting it out speedily in sufficient quantities," recalls to my mind another editorial item that appeared in *Coal Age*, Nov. 3, p. 770, comparing the costs of ore mining with that of mining coal.

While Mr. Ford may be a little astray in his details, in respect to handling coal from the working face to the tipple, I believe that his main idea that there is too much handling of the product "by hand" is correct. This is, also, the chief point of difference between metal mining and coal mining. By "handling of the product by hand," I do not mean the actual lifting of the material in the hands and carrying it out of the mine. I refer more particularly to the methods employed in handling and transporting the coal in its passage from the producer to the consumer.

Having served as chief engineer for one of the largest copper-producing companies in this country, as well as of an equally large coal company, I feel qualified to pass an opinion on this phase of the subject. As is made to appear in the editorial item last mentioned, there is an enormous difference in the tonnage per man, in the production of metals and coal.

The coal operator is not wholly to blame for this difference, however, as he is dealing with a product that occupies twice the space per ton as that occupied by the average product of metalliferous mines. In coal

mining, as compared with metal mining, there is practically twice the amount of development work required and more than twice the equipment. Twice the amount of working face must be kept open and practically four times the amount of narrow work driven, while the miner must do twice the shoveling and twice the number of cars must be filled, hauled out of the mine and dumped.

Another essential difference for which the operator is not to blame, but which is largely the result of the education or preference of the consumer, is what may be called the "fallacy of the lump." Gradually, the consumer is coming to realize the fact that slack or powdered coal fed into the furnace by a mechanical stoker is the most approved method employed today in the production of power by the consumption of fuel in a furnace.

While, at present, the lump seems to be the alpha and omega of coal operations, the day is coming and not far distant when the product of all coal mines serving the commercial market will be ground or powdered at the mine. The preserving of the coal in its lump form, as practiced so largely today, is responsible for the careful undercutting of the seam with machines, before the coal is wedged or broken down with a charge of powder. The large lumps are then carefully loaded into cars, hauled out of the mine and dumped over shaking screens from which they are loaded into the car by special loading booms.

COMPARING COAL AND METAL MINING

Compare this extraordinary care taken in the handling of the coal product, in order to preserve the lump form and prevent its being broken, when separating it from the much-deplored slack or "fines," with the customary handling of the output at metalliferous mines. To express the operation of a metal mine in terms of coal mining, the ore is "shot off the solid," with a 16-ft. hole loaded to "smash," without wasting powder.

From a longwall face, cut in steps, the ore usually gravitates to the gangway, where it is dropped unceremoniously from the loading chutes into the cars. A trip is loaded in about 10 min. and hauled out to the shaft bottom, where the cars are automatically dumped as they pass the loading chutes. Five minutes later the empty trip is making its return journey into the mine.

In ore mining, the contents of each trip is thus automatically dumped into a great pocket, which is often large enough to hold a day's run and from which the ore is discharged into skips holding 10 tons and raised to the surface at a rate that would make an ordinary coal digger's hair stand on end. At the shaft head, the skip dumps itself into a large steel bin equipped with a power-operated chute through which the railroad cars are filled as fast as a locomotive can back them under the chute.

Yes, I agree with Mr. Ford that there is much that the coal operators can do to expedite the handling of the coal. Perhaps a steel-chain mechanical loader and other automatic equipment would take the place of the "rubber belt" suggested by the editorial writer. A trip through the metalliferous regions of the West would impress most coal operators with the fact that they belong to the ultra-conservatives. **CUPRUM.**

Indiana, Penn.

Blacklisting To Prevent Mine Accidents

Letter No. 1—In line with the discussion of the prevention of mine accidents, which appeared recently in *Coal Age*, and in the hope of developing certain schemes whose general adoption will tend to reduce the number of accidents that occur from different causes but are chiefly the result of carelessness on the part of miners, I want to propose a scheme and ask for discussion of its merits and demerits. I refer to the question of blacklisting men who are guilty of carelessness, indifference to orders or insubordination in the mine.

My thought on this subject is suggested by observation of what took place, only the other day, in a mine where I am charged with the duties of safety inspector. A miner remarked to me, after hearing of another preventable accident, which made a wife a widow and half a dozen children fatherless, "More men is killed nowadays than was hurt and killed 20 years ago, according to the reports." He then continued to discourse on the safety-first movement having little effect to lessen the number of accidents in mines, and wound up by saying that "something seems lacking that is necessary to make the work a success."

AN ARGUMENT DRIVEN HOME

I was too busy then to dispute his claim, but was able to drive home a more effective argument, by pointing to a prop that he had just finished setting 2 ft. from the spot indicated by the chalk mark on the roof made by the foreman several hours before. The man was indifferent when I told him there were too many preventable accidents caused by just such neglect and carelessness as that of which he had just been guilty. He retorted with a sarcastic remark with reference to the "farce of the efforts recently put forth in rebuilding a hall devoted to the purpose of instructing men in the principles of safety first," adding that "men will do as they d— please, anyway."

I realized the truth of this last remark and was satisfied that the man before me was one of that number. There are many others like him who consider the preaching of safety first a mere farce as matters now stand. They recognize that the prime essential to the success of the movement is lacking, since there is no discipline or other means taken of enforcing the compliance of miners with the instructions given them.

At the present time, such is the scarcity of men at every mine that to enforce safety regulations and rules would mean to lose the services of many men who regard safety as a matter of second importance. Such a man simply "chucks his job" and goes to the next mine, where no questions are asked him. Reproved there for the same reason, he moves again, being always received with open arms under present conditions in the coal regions.

If it is true that men, knowing well what is required for safety in mines, will continue to "do as they please," is it not likewise true that, in organizing the great safety movement, we are, under the prevailing conditions, practically disorganizing the work by our failure to secure coöperative discipline in all mines? It is as though we dropped a monkey wrench into the main cogs of the system. In our zeal to obtain men and hold them in our mines, we are blocking the safety-first movement that we are pledged to support. In the matter of the prevention of accidents, the interests of mine operators is a common one and demands coöperation.

The man who proves to be careless, indifferent to orders or insubordinate, in one mine, and is discharged on that account will carry the same menace to another mine where he may be employed, unless, through coöperative agreement of coal operators, he is denied employment in mines, for a specified length of time.

THE "BLACKLIST" A FORMIDABLE WEAPON

The term "blacklist" is an obnoxious term, but it seems to be the only effective weapon available to mine operators, in view of the present conditions. The visitation of immediate punishment on a man guilty of an act that is a menace to his own safety as well as that of his fellow workers, would be more acceptable if such were possible.

The most effectual means to attain the desired safety in mines is the blacklisting of unsafe miners, through the hearty coöperation of all coal operators. By that means we may hope to eliminate from our mines what is a common menace to all. Such coöperation cannot but result in an ever-broadening betterment of coal-mining conditions. The individual loss is not confined to one mine, but is common to all mines. This, however, is infinitesimal compared with the ultimate gain in securing better discipline and greater safety in the mines.

Houston, Penn.

JAMES T. REYNOLDS.

Qualifying for Mine-Rescue Work

Letter No. 2—As is frequently the case when describing the work of mine-rescue teams, the report of the method of conducting the examination of candidates for mine-rescue work in Illinois, published in *Coal Age*, Dec. 1, p. 945, makes it appear that it is possible for the wearer of breathing apparatus to start right in and perform hard work, immediately after donning the apparatus.

In my experience, one must first become well accustomed to wearing the apparatus, before attempting to do any work. No man should run the risk of starting to perform heavy work when he is wearing this apparatus. It should never be done in team practice; because when a man wears the apparatus in a mine he is only supposed to do what he feels he can accomplish with safety.

Too often, in the training of rescue teams, the effort is made to have men speed up, by their starting to perform the work as quickly as they have donned the apparatus. Instead of this, the rule should be just the opposite. Men should be instructed to "proceed slowly, keep cool, consider the danger of over-taxation, watch the pressure gage and note constantly one's own breathing to observe whether it is free or labored."

Mine rescuers must remember that whenever a man dons a breathing apparatus, it is not a sure mainstay of life, as most first-aiders seem to think. He has, buckled on his back, the means of sustaining life, as long as he observes the necessary precautions in its use and is careful not to exceed the limits of taxation on his strength and endurance. To avoid this, he must watch carefully all that he intends to do and keep well within the prescribed limits of safety.

The account of the Illinois examination given in *Coal Age* is an interesting one and is certainly good, with a single exception, that it does not give the candidate the impression that he should refrain from doing heavy and hard work too rapidly and continuously, in practice, and in the mine. To work for one hour under difficult conditions is a strain that would overcome many men. The chief essential in first-aid work is to keep cool and observe every precaution.

MINE RESCUER.

Springfield, Ill.

[Our correspondent seems to overlook the fact that candidates in examination for the position of superintendent of a mine-rescue station, which was the case in the Illinois examination to which he refers, are men who are trained in the work and fully acquainted with the apparatus and accustomed to its use both in team practice and in the mine. The suggestions he makes, however, in regard to proceeding slowly and avoiding overtaxation and unnecessary hard work are good and should be carefully observed by all who undertake such work.—Editor.]

Conservation of Mine Gas

Letter No. 1—In a recent letter published in *Coal Age*, attention was drawn to the "wartime need of conserving material." In this connection, allow me to suggest that perhaps few of those interested in conservation work have thought, for a moment, of the great waste of power that is daily occurring in the escape of gas from mines throughout the anthracite district.

Attention was recently drawn to this matter, officially, by Governor Brumbaugh, of Pennsylvania, requesting representatives of the various boards of trade, in the anthracite field of that state, to meet in conference at Harrisburg. The governor there unfolded a plan, having in view the utilization of the millions of cubic feet of gas that now escape daily from the mines and are lost in the atmosphere.

The governor contended that the proper control of this gas as it issues from the mine and putting it to the practical uses of which it is capable would have the effect of bringing more industries into the state, while at the same time greatly reducing the risk of coal mining and lessening the number of accidents that are now caused by the presence of the gas in the mines.

It was urged that the need of eliminating, as far as possible, the danger arising from the presence of gas in mines was much greater today than ever before, because of the large number of men employed in the mines who are unfamiliar with the dangers to which they are exposed. The employment of this class of labor has been increased by the greater demand for coal and the scarcity of good miners as a result of the war.

The governor stated that, according to his information, 72,000,000 cu.ft. of gas, the equivalent of 148,

000,000 hp., is lost daily in the anthracite regions of Pennsylvania. In anticipation of objections from those who were skeptical and in whose mind it was finally settled that such a scheme was "practically impossible," the governor suggested the motto "Watch some other fellow do it."

In support of the idea of conservation of mine gas, the governor presented the following chart, which is

TABLE COMPILED FROM DATA SUBMITTED BY MINE INSPECTOR JOSEPH J. WALSH, AS THE RESULTS OF AIR AND GAS MEASUREMENTS TAKEN BY HIM AT EIGHT GASEOUS MINES OF THE 14TH ANTHRACITE DISTRICT IN PENNSYLVANIA

Colliery Shafts Where Measurements Were Taken	Percentage of Methane in the Air	Quantity of Air Passing, Cu.Ft. Per Min.	Quantity of Gas Given Off, Cu.Ft. Per 24 Hours
Susquehanna Coal Co., Colliery No. 5			
Lee Fan	0.10	90,480	130,300
Ross Fan	0.20	87,220	251,200
Mills Fan	0.36	137,120	710,800
Black Hill Fan	0.35	175,550	884,800
George Fan	0.04	35,840	20,600
No. 4 Shaft Fan	0.42	138,320	836,500
			2,834,200
Susquehanna Coal Co., Colliery No. 6			
No. 7 Shaft Fan	0.09	84,000	108,800
No. 6 Tunnel Fan	0.07	94,000	94,800
No. 22 Tunnel Fan	0.07	12,600	12,700
No. 6 Slope Fan	0.12	80,700	139,500
No. 1 Drift Fan	0.06	40,320	34,800
			390,600
Susquehanna Coal Co., Colliery No. 7			
South Shaft Fan	1.00	175,000	2,520,000
Double Fan	0.34	120,250	588,700
Electric Fan	0.46	80,530	533,400
			3,642,100
D., L. & W., Auchincloss Colliery			
No. 1 Shaft Fan	0.90	251,500	3,259,400
No. 2 Shaft Fan	1.20	201,600	3,483,600
			6,743,000
D., L. & W., Bliss Colliery			
No. 1 Fan	0.32	128,700	593,000
No. 3 Fan	0.60	145,000	1,252,800
			1,845,800
Alden Coal Co., Alden Colliery			
No. 1 Shaft Fan	0.03	53,300	23,000
No. 2 Shaft Fan	0.88	168,400	2,134,000
Baltimore Slope Fan	0.02	12,000	3,500
George Fan	0.15	145,000	313,200
			2,473,700
L. & W. Coal Co., Wanamie Colliery			
No. 2 Slope Fan	0.11	153,000	242,300
No. 3 Slope Fan	0.18	162,000	419,900
No. 28 Tunnel Fan	0.03	15,000	6,500
			668,700
West End Coal Co., West-End Colliery			
Long Drift Fan	0.07	185,000	186,500
Sand Drift Fan	0.08	40,920	47,100
Lee Shaft Fan	0.05	75,000	54,000
			287,600
Total for 8 collieries			18,885,700

interesting as showing the percentage and volume of gas escaping from the most gaseous mines of the anthracite district, located in the lower end of the northern basin. Notwithstanding the enormous quantity of gas issuing from these mines, it was stated that the flow is somewhat less than it was a few years ago.

ERROR IN ESTIMATED LOSS OF POWER

According to the figures given, the governor's informant estimates the horsepower obtained by burning this gas, as practically double the quantity of gas consumed. The estimate, however, is greatly in excess of even the theoretical power to be obtained by the consumption of the gas. For example, assuming a flow of 72,000,000 cu.ft. of gas in 24 hours, or 50,000 cu.ft. per minute, the weight of gas available for consumption is $50,000(0.0764 \times 0.559) = 2135$ lb. per minute. The heat of combustion of pure methane (CH_4) burned to carbon dioxide (CO_2) being 23,513 B.t.u. per lb., and 1 B.t.u. being equal to 778-ft.-lb., the horsepower devel-

oped by burning this weight of gas is $(23,513 \times 2135 \times 778) \div 33,000 = 1,183,500$ horsepower.

In the best gas-engine practice, it requires about three times the theoretical quantity of gas to develop a horsepower. This being the case, the available horsepower in a flow of 72,000,000 cu.ft. of gas would be considerably less than 400,000 hp. Moreover, if the gas is to be burned under boilers, there will not be near the efficiency obtained as when it is consumed in a gas engine.

HOW CAN THE ESCAPING GAS BE COLLECTED?

Now, referring to the matter of collecting this gas from the return current discharged from the mine, where it is diffused with the mine air, I would suggest following the recommendation of the governor, and "watch some other fellow do it." In certain instances, where it is possible to bleed the gas from the rock formations overlying the coal, as has been done and is still practiced in many localities, there is no question but the gas can be utilized for the production of power and lighting and heating. This is done to a large extent in the Pittsburgh district.

In one place, in Nova Scotia, it is recorded that the Indians used the gas that bubbled up through pools of water, for purposes of heating and cooking. At Wyoming, near Pittston, the gas escaping in this manner from the coal formations can be flashed above the water by applying a match to the surface of the pool. William Griffith tells of a man living near Pittston who dug a well from which he obtained enough gas to run the kitchen stove and supply a gas lamp in front of his house.

In such instances as I have mentioned, the waste gas of the coal formations can be used advantageously in many ways. But the suggestion of establishing an industry for the conservation of this gas is one that involves not only the question of ownership of the gas, but the right to compete on an industrial basis with established gas companies. It may be anticipating trouble to suggest these difficulties that might be encountered in the general adoption of the proposed scheme, but we will "watch some other fellow do it."

Scranton, Penn.

EUGENE B. WILSON.

Shotfiring in Mines

Letter No. 2—The matter of firing shots in coal mines is of the greatest importance and interest to practical miners, as upon the proper performance of the work depends the safety of everyone employed in the mine.

A few years of practical experience in coal mining is sufficient to convince one of the fact that the majority of coal diggers do not understand how to prepare a shot when shooting off the solid or when the coal is machine-mined. On this account it is necessary to employ one or more practical men to examine all shots before they are fired, and to instruct the men how to prepare their shots when mining under different conditions.

When shooting is done in a mine generating gas a shot that is improperly prepared or overcharged is almost certain to result in an explosion, due to the charge blowing its tampon and the flame of the blast igniting gas or dust.

In the use of black powder, especially, it is important that a shot should be well balanced. That is to say, the charge of powder employed must be just sufficient to break down the coal and no more. Also, the charge must be located in such a manner that the line of least resistance shall make a suitable angle with the axis of the hole, so that the force of the blast will not be exerted to blow out the tampon, but will tend to break the coal at the point of the shot instead.

It frequently happens that where the coal is cut by machines the miner is prone to drill his hole to a greater depth than the undercut or mining. The result is that the charge is located on the solid and is very apt to produce a windy shot if it does not, indeed, blow its tampon. The effect of a windy shot is to lift a great cloud of dust, which is thrown into the air and may be ignited by the flame of the shot and produce a local dust explosion.

GREATER SAFETY IN EMPLOYMENT OF SHOTFIRERS

Greater safety is assured where practical men are employed as shotfiring to tamp and fire all shots after the men have left the mine. A shotfirer should be able to judge correctly whether a hole is properly placed and is safe to charge and fire. In performing the work, he should give sufficient time for the air to sweep away the gases that expand against the current. The firing shot should begin on the end of the air and proceed in regular order against the air current. After the firing of each shot, the shotfirer should make sure that no gas has been ignited by the flame of the blast.

In making his report, a shotfirer should give the number of shots fired and state what shots, if any, have not been fired, explaining the cause and giving the location of such shots.

OSCAR JONES,
Mine Foreman.

Letter No. 3—I was much surprised, on reading the letter of former mine inspector John Verner, *Coal Age*, Nov. 3, p. 774, to learn that he claims that the mixture of gases liberated by an explosion of black powder "is incapable of promoting or maintaining an explosion," and that "the presence of this mixture in fairly large quantity will have a decided quenching effect on the flame of an explosion that is already under way."

Mr. Verner draws attention to the fact that laboratory tests show that the products of the explosion of black powder contain 32 per cent. of carbon dioxide. While not doubting that this is true and that the explosion of such powders may produce an even greater percentage of this gas, I want to say that, under the conditions that prevail in the blasting of coal in mines, there often results such an incomplete combustion of the powder that there is produced a large percentage of inflammable and poisonous gases, chiefly carbon monoxide (CO), which is highly inflammable.

Since this is the case, it would seem that the argument presented by Mr. Verner will scarcely apply to mining conditions. In actual mining practice, it is often observed that the gases accumulated behind a standing shot or in a close place where a blast has been fired form a mixture that is very inflammable. Many a miner has been burned by putting his lamp into such a place where the gas produced by a shot has accumulated in quantity and is fired on the lamp.

It would be interesting to know the results of laboratory tests, in respect to the explosion of the permissible powders, which are coming so largely into use in coal mines. I believe that such powders will produce a less percentage of these gases than is the case with black powder. I want to urge that it would be better to altogether prohibit the use of black powder for the purpose of blasting coal in mines, and to use in its place only permissible powders.

SHOTFIRERS SHOULD BE EXAMINED AS TO COMPETENCY

Referring to the employment of shotfirers in mines, I believe that the main reason for their employment is to prevent the unsafe practices of miners who are permitted to prepare and fire their own shots. The question may be asked, Are the men appointed to do this work always reliable and competent? In my opinion a rigid examination should be required of all shotfirers to determine their competency for doing this work. Not long ago, a writer in *Coal Age* mentioned an instance where the work of a shotfirer was performed too quickly for safety. The state mining law should be rigidly enforced, so that work of this kind cannot be done in the manner described.

In closing, I want to suggest that, in the use of permissible powders in gaseous mines, it might be much safer to fire all shots from the surface, after the men have been withdrawn from the mine. I hope that we shall hear from those who are using permissible powders and receive suggestions in line with their experience, in the work of blasting coal.

GASTON LIBIEZ.

Peru, Ill.

Shotfiring in Gaseous and Nongaseous Mines

Letter No. 1—Kindly allow me to add a word to the reply given to an inquiry from Colorado, as published in *Coal Age*, Oct. 13, p. 647. The inquirer asked to what extent the work of shotfiring is safeguarded in mines generating gas, or to what extent the mining laws of different coal-mining states discriminate between the firing of shots in gaseous and nongaseous mines.

It appears from the answer given to this question that, in many coal-producing states, shotfiring is permitted only by men of practical experience, and no shots are allowed to be fired in the presence of explosive gas. These requirements would seem to call for a rigid examination of men employed as shotfirers.

This is done in Colorado where all shotfirers must pass an examination given by the chief inspector of mines or one of his deputies, on the occasion of their visits to the mine. The examination is for the purpose of ascertaining if the man is qualified for the work of preparing and firing shots. Sections 153 to 159, inclusive, of the Colorado Coal-Mining Laws, forbid the overcharging of holes, the firing of dependent shots and shooting in the presence of explosive gas. Where permissible powder is used, the charge shall not exceed $1\frac{1}{2}$ lb. All shots must be undermined or sheared to a depth 6 in. deeper than the shothole. Every shot must be tamped to the mouth of the hole with clay or other incombustible material supplied by the operator.

The miner prepares his cartridges and leaves these at the mouth of the hole for the shotfirer to charge, tamp and fire. Wooden tamping bars must be used, and where gas is generated in dangerous quantities, all shots must be fired by electric batteries, one hour after the time for quitting and when all the men, except the shotfirers, have left the mine. Where a shot misfires, this must be indicated by a mark made by the shotfirer at the mouth of the room.

There are numerous mines in Colorado where the coal companies have installed electric safety lamps, not because they believe the mine to be dangerous owing to the presence of gas, but as an extra precaution against a possible sudden outburst of gas that would render the workings dangerous. There is always the danger of an increased outflow of gas from abandoned workings, following a sudden decrease in the barometric pressure.

NEW LAW IN COLORADO REGARDING ELECTRIC MINE LAMPS

Section 133 of the Colorado Mining Laws authorizes the chief inspector of mines, after Jan. 1, 1918, to compel the use of electric mine lamps or safety lamps or both when, in his judgment, this is required by the condition of the mine.

Among miners, in some localities, the impression has prevailed that the installation of electric mine lamps indicates that they are required by reason of the mine generating gas, and they wonder why electric batteries are not required for firing shots. The fact is, however, that the use of electric lamps is often found of advantage where no gas is present that would require the firing of shots by electric batteries.

On this account, some miners have been led to claim that there is discrimination shown in favor of some mines where electric lamps have not, as yet, been installed. It frequently happens that a mine is classified as "nongaseous" because gas has not been detected when the mine has been examined by the fireboss, using an approved gauze safety lamp, and yet it is possible to ignite gas in the drillholes in the mine. The reason that gas has not been detected on the safety lamp in those mines is that, owing to the ample ventilation of the workings, the gas is diffused as rapidly as it is generated.

THE CAUSE OF MANY MINE FIRES

This condition has given rise to some serious mine fires in Colorado, in mines where the shotfirer has not taken the precaution required by law to ascertain that no gas has been ignited by the flame of the shot, after firing. In nongaseous mines, where the miners fire their own shots, a gas feeder ignited by a shot fired, say Saturday evening, would not be discovered until Monday morning. The employment of shotfirers avoids this possibility, provided they are competent and perform the work as the law requires.

Let it be said that, in Colorado, the chief mine inspector knows the conditions existing in each operating mine; and in no case does he permit any violation of the mining law, which gives him authority to determine the manner in which the blasting of coal shall be performed and the kind of lamps that shall be used.

Farr, Colo.

ROBERT A. MARSHALL.

Inquiries of General Interest

Power Required To Compress Air

Assuming adiabatic compression of air, I would like to ask what horsepower will be required to compress 1150 cu.ft. of free air per minute to a gage pressure of 125 lb. per square inch.

Again, assuming that the compression cylinder is cooled by a water jacket, so that the rise of temperature during compression is from 60 deg. to 112 deg. F., what power will be required to compress the same volume of air per minute to the same gage pressure stated above?

R. T. STEWART,
Mine Manager.

Hillcrest, Alta., Canada.

Assuming the air cylinder has an efficiency of 85 per cent., the piston displacement, or the actual quantity of free air handled per minute, in this case, is $1150 \div 0.85 = 1353$ cu.ft. per min. There are two ways of estimating the power required in air compression.

(a) The mean effective pressure in the air cylinder is first calculated by the formula for adiabatic compression. This pressure, expressed in pounds per square foot, is then multiplied by the necessary piston displacement, expressed in cubic feet per minute, and the resulting product, divided by 33,000, will give the horsepower consumed in the compression of the given volume of free air, to the given gage pressure.

It is important to remember that atmospheric pressure decreases with the elevation above sea level and varies with atmospheric changes. Normal atmospheric pressure, at sea level, is taken as 14.7 lb. per sq.in. Owing to its compressibility, the volume of a given weight of air varies inversely as the absolute pressure it supports. For this reason, the compression of air is calculated from the absolute pressures, and the gage pressure at any elevation must be added to the atmospheric pressure at that elevation when computing the amount of compression in air.

The mean effective pressure, in adiabatic compression, for an atmospheric pressure $p_a = 14.7$ lb. per sq.in. (sea level) and a gage pressure $p = 125$ lb. per sq.in., is calculated by the formula

$$M.E.P. = 3.469 \times 14.7 \left[\left(\frac{14.7 + 125}{14.7} \right)^{0.29} - 1 \right] \\ = \text{say } 47 \text{ lb. per sq.in.}$$

Since this corresponds to a pressure of $47 \times 144 = 6768$ lb. per sq.ft., and the piston displacement, previously found, is 1353 cu.ft. per min., the corresponding horsepower is calculated thus:

$$H = \frac{Qp}{33,000} = \frac{1353 \times 6768}{33,000} = 277 + \text{hp.}$$

(b) Another method of computing the horsepower consumed in compressing air, and one that is adapted for use under varying conditions of pressure and temperature, is that known as the "heat basis." It should be thoroughly understood that no compression is wholly adiabatic or wholly isothermal, and results based on that assumption are accordingly approximate. The

heat-basis method when the actual temperatures and pressures are known is applied as follows:

The power required to compress a given volume of air per minute to a given pressure is calculated, on the heat basis, by multiplying the actual weight of air compressed each minute by the mean specific heat of the air and that product by the observed rise in temperature. The resulting product is the heat (B.t.u.) absorbed by the air in making this change. When the final temperature is not given, it is taken as that corresponding to the pressure. The horsepower required is then found by multiplying the number of heat units thus found by 778, to reduce to foot-pounds per minute, and dividing that product by 33,000.

In adiabatic compression, the ratio of the absolute temperatures of a given weight of air is equal to the ratio of the absolute pressures on the air raised to a power whose exponent is 0.29, as expressed by the formula:

$$\frac{T_2}{T_1} = \left(\frac{P_2}{P_1} \right)^{0.29}; \text{ or } T_2 = T_1 \left(\frac{P_2}{P_1} \right)^{0.29}$$

The temperature corresponding to a gage pressure of 125 lb. at sea level is, therefore,

$$t = (460 + 60) \left(\frac{14.7 + 125}{14.7} \right)^{0.29} - 460 = 539^{\circ} F.$$

The weight of 1150 cu.ft. of air, at 60 deg. F. and normal atmospheric pressure, at sea level, is $1150 \times 0.0764 = \text{say } 88$ lb. The specific heat of air being 0.2374, the heat of compression, in this case, is

Heat of Compression,

$$88 \times 0.2374 (539 - 60) = 10,000 \text{ B.t.u.}$$

The corresponding theoretical horsepower is,

$$\text{Horsepower, } H = \frac{10,000 \times 778}{33,000} = 235 \text{ hp.}$$

In order to calculate the saving of power by cooling the air cylinder by means of a water jacket, so that the rise of temperature is from 60 to 112 deg. F., for the same gage pressure, it is necessary to calculate the value of the ratio (n) of the specific heat of air for constant pressure, to that for constant volume.

For example, denoting the absolute temperatures and pressures, before and after compression, by T_1 , T_2 , P_1 , P_2 , respectively, and substituting the given values in the formula expressing the relation of pressure and temperature, we have

$$\frac{T_2}{T_1} = \left(\frac{P_2}{P_1} \right)^{\frac{n-1}{n}}; \text{ or } \frac{460 + 112}{460 + 60} = \left(\frac{14.7 + 125}{14.7} \right)^{\frac{n-1}{n}}$$

which gives, by the use of logarithms, $n = 1.044$. This value must be used in calculating the power required to compress air to 125 lb. gage, at sea level, when cooling to 112 deg. F., ignoring loss by radiation and clearance, which gives for the theoretical horsepower, in this case,

$$H = \frac{n}{n-1} \times \frac{P_1 V_1}{33,000} \left[\left(\frac{p_2}{p_1} \right)^{\frac{n-1}{n}} - 1 \right] \\ = 23.727 \times \frac{14.7 \times 144 \times 1150}{33,000} \left[\left(\frac{139.7}{14.7} \right)^{0.042} - 1 \right] = 173 \text{ hp.}$$

The saving in power, by cooling the air cylinder during compression is therefore $235 - 173 = 62$ hp.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—What are your duties when making your daily visits to working places?

Ans.—The law requires (Sec. 53) that a person when making the daily examination of each working place shall see that it is properly secured by props or timbers and permit no man to work in an unsafe place. He must also see that the place is provided with sufficient props, cap-pieces and timbers of suitable sizes and all other necessary materials, which must be delivered as near to the working place as practicable. He must also see that the props are cut square at each end and of proper length.

Ques.—If you were a mine foreman, in a gaseous mine, how would you arrange to distribute the air current to insure the greatest safety to life and property?

Ans.—The mine should be divided into two or more separate districts and each district be ventilated by its own air current. In general, a gaseous mine should be opened by driving the main entries four abreast, making the two central entries the intake and haulage roads and the two outside entries the return air-courses for their respective sides of the mine. As the development of the mine progresses, each pair of cross-headings should be ventilated by a separate air current, which is provided by building an overcast over the return airway at the mouth of each pair of headings, as soon as their development will justify the expense of this construction. By means of regulators, the quantity of air passing in each split should be controlled so as to meet the requirements in the several districts of the mine.

Ques.—The quantity of air passing in an airway is 120,000 cu.ft. per min., and the water gage produced is 2 in.; what are the units of work performed each minute and the horsepower producing the circulation in this airway?

Ans.—A water gage of 2 in. corresponds to a pressure of $2 \times 5.2 = 10.4$ lb. per sq.ft., which is the unit of ventilating pressure, in this case. The units of work performed in the ventilation of the mine is found by multiplying the quantity of air passing, in cubic feet per minute, by the ventilating pressure, in pounds per square foot. Hence, the work performed, in this case, is $120,000 \times 10.4 = 1,248,000$ ft.-lb. per min. The horsepower producing this circulation is, then, $1,248,000 \div 33,000 = 37.8$ hp.

Ques.—What precautions should be taken in the use of safety lamps in gaseous mines?

Ans.—None but the most approved type of safety lamps should be used. These lamps should be owned by the company. They should be examined, cleaned, filled, trimmed and lighted by a competent man placed in the charge of the lamphouse. The lamps should be num-

bered to correspond to the check numbers of the men employed underground. They should be kept in a rack, each lamp occupying its own pigeon-hole or hook, which is numbered to correspond to the number of the lamp.

Lamps should be given to the men in exchange for their lamp checks, at the beginning of each shift. When a miner returns his lamp, on coming out of the mine, his lamp check is returned to him. By this system, the lamp rack serves as a bulletin or checking board, for ascertaining what men are in the mine.

In addition to the care of the lamps, it is absolutely necessary to give each man careful instructions in regard to the use of a safety lamp. He must be made to understand that no lamp is safe when improperly handled. Each man must be made responsible for the condition of his lamp.

Ques.—What dangers arise from blasting coal out of the solid, in a dusty mine?

Ans.—When coal is shot off the solid the charge is given less opportunity to perform its work of breaking down the coal than when a shot is properly mined or sidecut or both. The result is that there is more danger of such a shot blowing its tampon, or the coal being shattered and a windy shot being produced. Either of these occurrences would result in a large quantity of dust being blown into suspension in the air, by the force of the blast. The cloud of dust produced may easily be ignited by the flame of the explosion and a local dust explosion result.

Ques.—Which, if either, should be the larger—the main intake or the return airways? Explain why.

Ans.—Under the conditions common to coal mining, the return airway of a mine should have a larger sectional area than the intake airway, for several reasons. The temperature of mine workings is generally higher than that of the outside atmosphere, which means a higher temperature of the return air current, than is the case in the air entering the mine. Since the volume of air increases with a rise of temperature, the quantity of air measured on the return airway will be generally greater than that measured on the intake of the mine. Again, the volume of the return current is generally increased by the presence of gases produced in the mine. In order to avoid an increased velocity of the return current and a consequent increased mine resistance, due to the greater volume of air passing, the sectional area of the return airway should be greater than that of the intake.

Ques.—Find the quantity of air passing per minute in an airway 14 ft. 6 in. wide and 5 ft. 9 in. high, when the anemometer registers 539 r.p.m.?

Ans.—The sectional area of this airway is $14.5 \times 5.75 = 83.375$ sq.ft. Taking the reading of the anemometer as indicating the velocity of the air current in feet per minute, the quantity of air in circulation in this airway is $83.375 \times 539 = 44,939+$, say 45,000 cu.ft. per minute.

Coal and Coke News

For the Busy Reader

An increase of 10c. a ton on mine prices for coal produced in middle Tennessee has been ordered.

Hundreds of cars of coal which arrived at Lake ports too late for movement by boat to the Northwest have been diverted to Ohio cities, where Governor Cox reports acute distress.

Car shortage is receiving more attention than ever before at the Fuel Administration. Each case where production has been cut materially as a result of car shortage is being investigated.

Dr. Garfield has announced that any effort on the part of dealers to realize the increased price on anthracite shipped from the mines prior to Dec. 1 will bring upon them severe consequences.

A tract of 238,082 acres of land in the former Fort Berthold Indian reservation of North Dakota has been opened to coal entry. The coal is classified as lignite, but is of a grade suitable for use as fuel.

Representatives of the operators and of the miners in the Ohio field met in Cleveland, Dec. 13, at the request of the Fuel Administrator, to settle their differences relative to the price miners shall pay for powder.

The advance of 35c. a ton allowed by President Wilson on anthracite coal will not apply to coal in the hands of jobbers or retailers when the advance was ordered. The advance applies only to coal actually shipped from the mines.

Recognizing the peculiar difficulties which surround the mining of coal in Utah, mines in that state have been allowed to charge \$2.80, \$3.30 and \$2.50 for run-of-mine, prepared sizes and slack respectively. The old prices were \$2.60, \$2.85 and \$2.35.

In an effort to assist in the campaign for the conservation of fuel the Bureau of Mines is mailing to all newspapers in the country and to many consumers of coal a copy of a paper by David Moffat Myers, which was presented at the annual meeting of the American Society of Mechanical Engineers, held in New York, Dec. 4-7.

Prior to the meeting in Cleveland, Dec. 7, the plans of the Coal Shippers' Terminal Pool Association were approved by Dr. Garfield. The feasibility of the uniform pooling arrangements at important terminals in the South and West was studied carefully by Dr. Garfield, who not only approved the plan but urged its immediate adoption.

Failure of its plan to save coal by restricting the use of electric signs during certain hours was admitted at the Fuel Administration this week. Only a small saving of coal has been effected. In an effort to hit upon a more effective plan, the Fuel Administration now is considering having certain lightless nights, following the plan of wheatless and meatless days, which has been so successfully carried out by the Food Administration.

The National Daylight Saving Association is seeking an audience with the Interstate Commerce Committee of the House of Representatives to urge that the committee report for public hearing the Daylight Saving bill. The Senate has already passed this bill. According to the association, England saved 300,000 tons of coal in the summer of 1916 and France cut her fuel and light expenses \$10,000,000 in the same period by advancing time an hour. Most European countries have adopted this measure.

Permission to charge higher prices on bunker and export coal is expected as the

result of the discussion of this question, which is now in progress. Since the President's prices were announced, complaint has been general that they should not be extended to coal which is for the use of foreign shipowners and for foreign countries. One of the strongest arguments against applying the President's prices to bunker and export coal is that it contributes to a large profit on the part of vessel owners and to the importers.

Particular attention is being directed by the conservation division of the Fuel Administration to the elimination of unnecessary uses of electricity. The American Electric Railways Association has been induced to urge the elimination of unnecessary service on the part of street railway companies. Less frequent stops, the doing away with electrical heating in interurban waiting stations and the elimination of small and uneconomically operated power station are some of the ways in which a saving of fuel is expected to be effected.

HARRISBURG, PENN.

Quite a number of the larger operators are unanimous in denying alarmist stories of a shortage of labor in the coal mines of the state, due to internment of enemy aliens following a declaration of war against Austria. On the contrary, they say the next few weeks will mark a decided increase in the output of coal, especially in the anthracite coal fields, owing to the new increase in wages just put into effect, which will to some extent remedy the labor shortage, as many men are reported as returning from the munition factories to take up their old places in the mines.

In the first place, by far the great majority of Austro-Hungarian subjects employed in the mines are of the Slavonic races, and not only have evidenced their loyalty to the United States, but have every reason to hate the Teutonic domination.

It is pointed out that all immigration has been at a standstill since 1914, and in the intervening time aliens have had ample opportunity of becoming thoroughly Americanized. None of the large operating companies so far as is known will take any measures to lay off or discharge men on account of Austrian nationality, unless some governmental action demands it.

In the second place, the probability of a general internment of Austrian subjects by the United States Government is greatly exaggerated. No such extensive action has been taken in regard to the much more noxious Germans.

Internment has been resorted to only in cases of proven or strongly suspected disloyalty or sedition. It is pointed out that, although the proportion of German subjects, other than Poles, who are employed in the mines is low, there has been no attempt to intern them. It is therefore extremely unlikely that harsher measures would be taken against the less dangerous Austrians. Whatever Government action is taken, it is expected, will be directed toward a weeding-out process to separate the Austrians proper, and others of Teutonic birth and leanings owing allegiance to the dual monarchy, from those Poles, Croatians, Lithuanians, Magyars, Serbs and Slavonians who are subjects by force rather than citizens by inclination. It is a notable fact that in recruiting the Polish army for service in France from the hard coal regions not a few volunteers have been technically born Austrian subjects and a large part of the foreign-born volunteers in the American forces taken from Pennsylvania have come from Emperor Charles' dominions.

Following the declaration of war on Austria, it will greatly affect the workings of the State Compensation Board, according to a statement made by Harry A. Mackey, chairman of the board.

Chairman Mackey said that thousands of Austro-Hungarians are employed in the coal regions, and as many are killed or injured while engaged in this occupation, their wives or dependents are entitled to compensation under an act passed recently by the Legislature. The question, he said, is what shall be done with the money to which the dependents are entitled if they still live in the old country and are there-

fore subjects of Austria, with which country the United States will have no communication, now that war has been declared. The probable solution to this question is that the amount of compensation insurance award would be turned over to Mitchell Palmer, who has been appointed to preserve the money due enemy aliens, until after the war.

According to figures of the Department of Mines at the close of the year 1916, there were 328,505 persons employed inside and outside the coal mines of Pennsylvania. Of these, there were among the Austro-Hungarian nationality 43,384 inside and 7002 outside of the bituminous mines, and in the hard coal region 17,093 were employed inside and 5861 outside the mines.

S. D. Warriner, president of the Lehigh Coal and Navigation Co. and chairman of the anthracite operators' general committee, with headquarters in Philadelphia, has sent out bulletins asserting that the new price-fixing agreement, now in effect, should mean to the 150,000 anthracite miners and million and a half inhabitants of the hard-coal regions a jump to full speed ahead at every colliery. The wage increase, together with the increase of 35c. a ton in the price of coal, became effective Dec. 1. The bulletin concludes:

"The new wage scale will cost operators producing more than half of the output above the 35c. higher prices to be received for anthracite, while for many producing companies the effect of the agreement is a greater or less burden. The terms of the agreement now put into effect between the miners and operators give to the mine workers the full wage scales, as arranged. They carry increases in the average daily pay ranging from 25 to 48 per cent. over the scales put into effect last spring, and 35 to 52 per cent. over the wages as established in the four-year contract, made in 1916.

"It is believed that the higher wage effect will hold all men now in anthracite production and help increase the output, which is the essential thing. Assurances have been given by the United Mine Workers' officers that they will cooperate in the fullest way to get the largest production of anthracite."

The Pittsburgh Coal Operators' Association has adopted plans for pooling in the central coal territory, and a committee of five to have charge will be named at once and these men will name a director.

Operators of small coal mines who have found it difficult to furnish coal at the price set by the Government will be provided for in a special ruling made by the State Fuel Administrator. A subcommittee has been appointed in the Pittsburgh district with W. D. Kuhn, fuel administrator for the city of Pittsburgh, as chairman, to investigate the cost of production of coal and delivery from those small mines, and a price will be fixed by the state administrator so that the mine operators may have a reasonable profit.

It is understood that shippers who protested against unequal car distribution, which they charge exists on the South Fork branch in the Central bituminous district of the Pennsylvania R. R., have received vague and formal answers up to date. It is said the worst car shortage prevails on the Pittsburgh division of the Pennsylvania, where high-grade steam and gas coals originate. In the Altoona district, it is stated, the car supply is very good, and in the Clearfield district it is reported some mines are getting virtually 100 per cent.

The general operating committee of the Eastern railroads on Dec. 6 decided to pool, effective immediately, all coal-carrying cars upon the roads it represents, and formally asked the special committee on national defense of the American Railway Association that immediate authority be secured from the proper Government representative to pool the coal-car equipment of private owners at home on the lines of the railroads represented by this committee and establish a rate of compensation therefor.

The action of the committee was based on the fact that about 80 per cent. of the coal mined in the country originates on roads represented by the committee, and that an enormous amount of shifting can

be eliminated by pooling coal cars and using them interchangeably.

The new organization is to be known as the Eastern Railroads Coal Car Pool, with headquarters at Pittsburgh, and will be under the management of F. G. Minnick, of the Pittsburgh & Lake Erie Railroad.

It is reported that the anthracite coal-carrying railroads believe that the pooling of coal cars will not benefit them, but will make matters worse than they are at present.

A unique case, based on the speculative principle of future damages, has arisen in the Scranton mine-cave situation. A suit, backed by the Scranton Surface Protective Association, has been filed against the People's Coal Co., in which a claim is based on future damages which might result from surface wrecking and the ever-present risk to life and property.

It is determined to obtain from the Supreme Court a flat ruling stating definitely and conclusively whether an injury or the underlying cause of the injury shall be the controlling factor in a damage suit. The attorneys admit that the case looks somewhat absurd, but they are determined to have the highest court in the state settle this question.

In a decision of the Supreme Court some time ago it was ruled that a man is barred by the statute of limitations if the suit for the damaging of property is brought six years subsequent to the date of the mining, regardless of when the damage was done. This is the point that the Protective Association desires to have settled with an unequivocal ruling. This is given as the reason for filing a suit for damages which may occur in the future to homes and property in the anthracite region.

PENNSYLVANIA

Anthracite

Pottsville—There is little indication that there is such a day as Sunday on the railroads in this section. The number of coal trains being sent down the line is causing great activity. At the St. Clair yards of the Philadelphia & Reading Coal and Iron Co. the greatest trouble is the waiting for crews. Railroad employees have but little more time than the law requires for rest. The raising of the miners' wages, it is predicted by mine leaders, will cause a great increase in the production of coal. December will witness the breaking of all records in the prediction of well-informed miners.

Brownstown—Mine caves menacing the property and lives of three families on Brown St., notice was served upon the residents by officials of the Pennsylvania Coal Co. to remove their dwellings. It is believed that the surface settlements result from breaking of the roof in workings of the No. 4 shaft, where it is said the company is robbing pillars as the quality of coal at that point is good. Most of the dwellings in this town are erected on ground leased from the company and occupants have no redress, they state.

Nanticoke—German sympathizers are suspected of having caused much damage to the shaft of No. 2 colliery of the Susquehanna Collieries Co. on Dec. 8, as a result of which, operation of the colliery was stopped. Four coal cars had been chained and fastened to a block at the head of a vein, 100 feet from the bottom, when work was stopped on the night previous. It was discovered the next morning that the cars had been released and sent into the shaft. Opening to the vein had also been blocked with a door, and a fire had been started in a shifting shanty in that section, it was discovered. The damage was discovered in time to prevent the closing down of the entire colliery. In the town it is believed that German sympathizers deliberately attempted to interfere with the production of coal at this critical time.

Nanticoke—Mrs. Peter Wisner, of Jones St., on Dec. 7 undertook to anticipate woman labor in the mines by going into the Auchincloss colliery of the Delaware, Lackawanna & Western R.R., Coal Department, to work as loader for her husband, a contract miner. She did good work for an hour—until the mine foreman discovered her—when she was quickly dismissed, the latter being no believer in woman labor, outside of the kitchen. Mrs. Wisner was highly indignant and declared she was just as good a pick and shovel as any men, and better than some.

Bituminous

Lovejoy—The new mines of the Estep Brothers' Coal Mining Co. here made their first shipment of coal last week. The tip-

ple, shop, store, etc., are completed and 25 miners' houses are in course of erection. The tract which the new openings tap is 1158 acres. Shipments will be made over the Pennsylvania and New York Central.

Indiana—The Indiana Land and Improvement Co. sold to Thomas S. Lowther of this place the tract of coal known as the Huston farm, containing 287 acres, for approximately \$50,000. Mr. Lowther has now resold the tract to Squire McHenry, of Spangler. The land is underlaid with 100 acres of the "E" vein and 275 acres of the "B" vein. No plans have as yet been announced for the development of the property.

Homer City—A company composed principally of Pittsburgh men has purchased several tracts of coal south of Homer City and plan the development of the same at once. The coal will be reached by sinking a shaft about 100 ft. deep.

Connellsville—The H. Koppers Co. of Pittsburgh, manufacturer of byproduct coke, is assembling materials for a large operation at Champion, in the Indian Creek Valley, for the shipment of coal for byproduct purposes. The company will build a village of 200 houses, to be known as Melcroft, at the mouth of Champion Run. When the operation is fully under way, the output will be 40 to 50 cars of raw coal a day.

Audenried—The new stripping at the Green Mountain Colliery of the Lehigh and Wilkes-Barre Coal Co. is finished, and the equipment is being moved to another section of the workings, where a great area of undeveloped anthracite will be bared.

ALABAMA

Birmingham—The Republic Iron and Steel Co. completed the construction of its temporary tipple at Sayreton Mines and operations were resumed on Dec. 6. The production will be confined to mine-run coal until the permanent tipple and washery have been completed. The new structures will be built with all dispatch possible. The tipple and washery were destroyed by fire on the night of Nov. 27.

WEST VIRGINIA

Morgantown—Most of the mines in the Scotts Run section have been practically out of business for the past ten days, owing to the insufficient car supply. Some of the operations have not had a car for a week, and the situation seems to be getting worse.

Monongah—The Tadpole Coal Co., which in mining the coal from the bed of Booths Creek, just under the Booths Creek bridge, has already removed many carloads of coal.

Wheeling—The Jim's Run mine at McMechen has made many improvements recently and are about ready to open a new tipple which will greatly increase the output. All of the coal that is mined is being sent out as fast as it can be loaded into cars. The company recently installed two new motor trucks for local delivery and also put in a 12-ton scale.

Worthington—The request of the Connellsburg-Fairmont Coal Co. for permission to extend its siding across the county road at Tevelong Creek, a half mile north of Worthington, has been granted by the county court.

Lundale—Pending the completion of its steel tipple, following the recent fire, the Lundale Coal Co., George M. Jones, general manager, has been dumping coal over the hill to tipple tracks and then loading by means of hoists. Another track will be added, and the coal mined and dumped when there are no cars available.

Fireco—The Leckie Fire Creek Coal Co. has completed a building containing an amusement hall, bathhouse and moving picture theater for the benefit of its employees at the Fire Creek plant.

TENNESSEE

Whitwell—W. L. Ross, aged 58, coal miner, claims the record for a month's production of coal. He loaded 251 tons during November, the average being from 150 to 200 tons a month.

Breaking of the spring lever attached to the drum machinery at the mines of the Tennessee Coal, Iron and Railroad Co. here caused a suspension of operations.

Sequatchie—The Campbell Junction Coal and Land Co. has purchased 4080 acres of Cumberland County coal land from the Missouri Land and Coal Co. Good veins of coal have been opened at Maryland, averaging 4 ft., and it is proposed to build a railroad into the field and develop it.

KENTUCKY

Paducah—The Paducah Traction Co. and the Paducah Light and Power Co. announced

that they would be compelled to shut down, due to exhaustion of their coal supply. The stormy weather has prevented receipt of additional supplies.

Whitesburg—Fire which destroyed the headhouse of the Southeast Coal Co., at Seco, Ky., further damaging the plant of the company, has been attributed to incendiaries. Guards have been stationed around plants by operators in the vicinity of Seco.

OHIO

Marysville—Schools in Taylor Township have been compelled to close on account of lack of fuel for heating, and the state authorities have been appealed to for relief.

ILLINOIS

Hillsboro—On Thanksgiving Day the 30th anniversary of the Hillsboro mine was celebrated. The shaft was sunk by a company of Hillsboro capitalists. They operated it several years without paying dividends and then sold it to John M. Whitehead and Amos Miller, who have operated it ever since. Rice Miller has been the superintendent for several years. Some of the men who began working in the mine 30 years ago are still working there.

Christopher—The cause of the explosion on Nov. 29 in the Old Ben mine, in which 16 men were killed, has not been determined, according to Evan John, Director of Mines and Mining. Inspectors are making a thorough investigation. Thirteen bodies have been recovered. Work cannot be resumed at the mine for at least a month.

Ziegler—Sixteen men were severely burned in two explosions in the Bell & Zoller mine No. 1 on Dec. 5. The first occurred in a chamber near the main shaft. It set fire to the mine. The second explosion occurred three hours later while miners were fighting the flames. The damage to the mine was not great, but 700 miners are thrown out of work temporarily.

Benton—Fire was discovered at 6 p.m. Dec. 7, in the rescreeper of the Benton Coal Co.'s mine here. The rescreeper was filled with coal. The mine water-works was out of order, and the flames spread to the engine and boiler rooms. Dynamite was used to destroy the rescreeper and check the flames. The estimated loss is \$200,000, and the mine will not be able to resume under six months. It employs between 500 and 600 miners, and the output has been 3000 tons a day. The principal owners are P. A. Pearce and Robert Williams of Carmi, Illinois.

Foreign News

Crow's Nest Pass, B. C.—The collieries in this district, which are now operated under Government control, are producing 23,000 tons of coal per day, the largest output in their history, and everything is running smoothly.

Nanaimo, B. C.—The first shipment of coal from the new mine opened south of Wellington by the Canadian Collieries, Ltd., was made on Nov. 27. Development is making rapid progress and the output is expected shortly to reach 1000 tons per day.

Victoria, B. C.—Figures compiled by the chief mine inspector of the province up to the end of October show the output of coal for the first ten months of the year for Vancouver Island mines as 1,431,552 tons, and for the rest of British Columbia, 540,929 tons. This indicates that, notwithstanding the protracted strike in the Crow's Nest Pass area, the total output for the year will be considerably in excess of the production of 1916, which was 2,048,000 tons.

Ottawa, Ont.—An important conference of Western coal mining officials and representatives of the Canadian Government and the Commission of Conservation was held on Dec. 6. Dr. Frank B. Adams, of McGill University, Montreal, presided, and among others in attendance were James White, of the Conservation Commission; John P. Sterling, chief Mining Inspector of Alberta; T. M. Mulroy, Saskatchewan Mining Branch; H. H. Rowatt, Controller Mining Lands Branch, Ottawa; O. S. Finnie, inspecting engineer, and Charles Fergie, mining engineer, of Montreal. The object of the conference was to ascertain definitely the character and extent of the excessive waste attendant upon coal mining in western Canada, and to devise measures for checking it and placing coal mining in the West on an economical and scientific basis.

Personals

Paul T. Morton, Jr., of Boswell, Penn., division engineer of the Somerset Division of the United Coal Corporation, resigned, effective Dec. 10, to enter the army.

John L. Lowther is superintendent of the mines of the Big Creek Coal Mining Co. near Harmony Junction, Butler County, Penn. His headquarters are at Harmony, Penn.

Charles Snyder, of Freeland, Penn., has been named to succeed Wilmot Jones as assistant superintendent at Midvalley colliery. Mr. Jones has enlisted in the aviation corps.

William Edwards, an employee of C. M. Dodson & Co., at Beaver Brook colliery, Beaver Brook, Penn., for the past 45 years, has resigned as inside foreman, effective Jan. 1, 1918.

Robert Pettigrew, of Danville, Ill., mine inspector, Seventh District, has tendered his resignation to Governor Lowden, to take effect Jan. 1, 1918, to accept the superintendency of the Brady Branch Coal Co.

Martin Malony, formerly superintendent of Jacksonville Nos. 1 and 2 mines of the Jefferson and Clearfield Coal and Iron Co. at McIntyre, Penn., is now superintendent of the Dilltown Smokeless Coal's Co. plant at Dilltown, Penn.

W. H. Hogue, of Pittsburgh, Penn., has been promoted from the position of transit man to division engineer of the Pittsburgh Division of the United Coal Corporation, to succeed George B. Campbell, of Pittsburgh, Penn., resigned.

Floyd F. Chadwick—1111 Land Title Building, Philadelphia, Penn., has been appointed secretary of the Philadelphia Wholesale Coal Trade Association, Philadelphia. Mr. Chadwick has recently been engaged in the preparation of a report to William Potter, state fuel administrator, as to the probable amount of free coal which would be received if central Pennsylvania mines received 50 per cent. car supply.

George DeBolt, Jr., superintendent of Mine No. 29, property of the Consolidation Coal Co. near Clarksburg, W. Va., has been transferred and is made superintendent of the company's new mines near Wyatt. **T. B. McGregor**, formerly foreman at Mine No. 25, has been transferred as superintendent of Mine No. 29, succeeding Mr. DeBolt. **B. G. Ash**, superintendent of Mines Nos. 25, 50, 62 and 94, has been transferred as superintendent of Mines Nos. 50, 62 and 94, near Clarksburg, and is made superintendent of Mines Nos. 25, 27 and 48. Thomas Garrett is Mr. Ash's assistant. **W. T. Christie**, formerly outside foreman at New England, has been transferred as superintendent at Mines Nos. 50, 62 and 94.

Obituary

Leroy Thorp, for 25 years top superintendent of the Madison Coal Corporation's mines at Glen Carbon, Ill., died a few days ago at his home, from paralysis. He was 65 years old.

John Henry Cummer, a prominent business man of Hamilton, Ontario, and president of the Cummer Ice and Coal Co., died on Dec. 6, at the age of 67 years. He was a leading member of the Masonic order and leaves a widow and six children.

Eugene A. Delaney, of Windber, Penn., chief engineer for the Berwind-White Coal Mining Co., and one of the best-known mining men in the bituminous field, died on Dec. 9 at the Windber Hospital. He was 44 years old. Mr. Delaney's death was due to lobar pneumonia. The remains were taken to Lykens, Penn., for burial. He was a graduate of Notre Dame and graduated in the class of 1899.

Industrial News

Lansford, Penn.—A new plant is being erected near here by the Lehigh Coal and Navigation Co., for the manufacture of anthracite briquettes.

Chicago, Ill.—The Worth Husky Coal Co. has sold the Knox mine to the Ridge Coal Co., of Chicago, for \$200,000. The sale includes the mine and tipple and 262 acres of coal land under lease.

Cincinnati, Ohio—Goodin, Reid & Co., manufacturers of brattice cloth, announce that they have appointed L. V. Blue as their resident agent at 987 Union Arcade Building, Pittsburgh, Penn.

Providence, Ky.—J. B. Dover is opening a slope coal mine near the Louisville & Nashville tracks. He will install steam haulage and build a switch to the railroad. There are about sixteen acres of coal in the tract.

Philadelphia, Penn.—The Lehigh Valley Railroad Co. has lifted the embargo on coal coming from Pennsylvania R.R. points. The clearing of the lines of both companies will permit the delivery of coal to Pennsylvania towns.

Chattanooga, Tenn.—The Chattanooga Gas Co., which has been supplying large consumers at special rates on contracts, has advised these consumers that on expiration of the contracts the full rate of \$1.10 will be collected.

East St. Louis, Ill.—Samuel W. Baxter, an attorney, has been appointed fuel administrator for East St. Louis. A committee for Belleville and St. Clair County was appointed some time ago. The other members of the East St. Louis committee have not been named.

New York, N. Y.—The Western Electric Co., of 195 Broadway, announces that G. A. Schneider, formerly of the company's San Francisco organization, has been appointed manager of the Buffalo branch, succeeding J. W. Tabb, who has been transferred to the New York office.

Wilmington, N. C.—The Cement Products Co. of this city, has been awarded contract by the Board of School Commissioners, Mobile County, Alabama, to equip the majority of the rural schools in Mobile County with the "Sanisep" sewerage disposal systems, manufactured by that company.

Louisville, Ky.—Thomas H. Rhea, of Louisville, has been appointed explosive inspector for Louisville, while Lemuel T. Osborne, of Mt. Vernon, Ind., and Albert M. Leach, of Clarksville, Tenn., have been appointed to the same offices in their states. They will work under the direction of the Bureau of Mines.

Bream (Big Chimney P. O.), W. Va.—The Empire Coal Mines Co., Inc., R. Brunet, superintendent, announces that its plants is now fully equipped with power house, electricity, motor, mining machines, etc., and that it now has capacity of 600 tons daily. Within a few months the capacity will be increased to 1000 tons daily.

Jefferson City, Mo.—Wallace Crossley, Missouri fuel administrator, has announced that within a few days he will issue an order limiting deliveries of coal. It will provide, he says, that where 30 days' supply exists no further deliveries will be made until other orders are filled. Those who have 10 days' supply or less will be looked after first.

Canton, Ohio—As a result of the death of Ira R. Koontz, a miner, said to have resulted from gas in a mine owned by the Whitacre-Greer Fireproofing Co., of Waynesburg, Ohio, in July, the company has been sued by the widow for \$5000 damages, it being alleged that Koontz was permitted to enter the mine too soon after a blast which caused the gas.

Chicago, Ill.—During the week past a meeting was held in Chicago by various coal operators and railroad men, to discuss the question of pooling. The consensus of opinion was that railroad terminal congestion, or unsatisfied fuel demand, did not as yet demand such definite violation of established customs and practices, as to necessitate the pooling of coal.

Uniontown, Penn.—George and Harry Whyel, two well-known coal and coke operators, have purchased the old Methodist Episcopal Church for \$30,000 and have turned it over to the city as a Christmas gift. About \$10,000 will be expended by Messrs. Whyel in remodeling the building, which will be equipped as a public library and an auditorium for public meetings.

Nuremberg, Penn.—The Gowen mines of the Coxe Bros. & Co., Inc., have been connected with the Harwood Electric Co. lines and will be run by electricity. Nuremberg, a mining village across the mountain from Gowen, will be supplied with electric lights and power. The new silk mill in course of erection here will be the first industry the town has outside of the anthracite collieries.

Columbus, Ohio—The announcement is made that the Baltimore & Ohio, the Penn-

sylvania, the Norfolk & Western, the Toledo & Ohio Central and the Kanawha & Michigan have ruled that no open equipment is to be supplied to wagon mines on their lines. The only equipment to be given that class of mines is box cars. The Hocking Valley Railway Co. is expected to follow with a similar order.

Columbus, Ohio—B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association, reports that during the month of November the claim department collected more than \$2000 for the members from railroads. For the 11 months of the present year the claim department collected in excess of \$17,000 for its members. During that time new members to the number of 232 have been received.

Youngstown, Ohio—About 60 retail coal dealers of Youngstown and vicinity met with the authorities having charge of the fuel situation and pledged their co-operation in carrying out the Government's program of conservation. All orders for coal will be placed through a central bureau, and hoarding and excessive ordering will be prevented. W. P. Arms is the fuel administrator in charge of the situation.

Louisville, Ky.—The coal supply shortage all along the Ohio river has been considerably relieved by shipments of coal by water from West Virginia fields. Manipulation of the lochs in the rivers formed at artificial "waves" on the crest of which the tows came. Barges were dropped at towns all along the route, Louisville, it is said, which received two barges of the coal, being the southernmost point to obtain any.

St. Louis, Mo.—St. Louis consumption of coal from the 100-mile zone in Illinois increased 17 per cent. in the first 28 days of November, as compared to the same period last year, according to a compilation made by William Cameron, secretary of the St. Louis Coal Traffic Bureau. The tonnage for the 28 days last month was 891,908 tons. In 1916 it was 759,856 tons. In 1915 it was 588,580 and in 1914 it was 567,094.

Lexington, Ky.—City Commissioner George Land, one of the largest coal dealers of Lexington, makes the statement that not 50 per cent. of the coal miners who went out in the strike last summer have returned to work. He has just returned from a personal visit to the coal field in quest of coal. Practically none of the large operators will take an order, Mr. Land being able to place some only with wagon mines.

Toledo, Ohio—The Kanawha & Michigan and the Toledo & Ohio Central railroads, indicted nearly two years ago on a charge of granting concessions to shippers, pleaded guilty in the United States district court. The roads permitted the Kelley's Creek Collieries Co. to store coal in cars along the railroads' property without charging demurrage, it is claimed. The Hocking Valley, indicted at the same time, is preparing to contest the case.

Memphis, Tenn.—Retail dealers in Memphis have been enabled to take affidavits of customers through the action of the circuit court clerk, who has appointed them and their employees deputies of his office, empowering them to receive affidavits, although not clothing them with notarial powers. The so authorized individuals are pledged to take these affidavits which consumers must make before coal can be ordered without charge.

St. Louis, Mo.—Seven municipal coal stations were opened with the coming of the first cold wave of the winter. The buyers were not numerous. The largest amount sold at any one station was about 150 bushels. The coal is sold at the cost price plus freight and hauling to the stations, 16c. a bushel. Not more than five bushels are sold to any one purchaser. Purchasers must make their own delivery. Other stations are to be opened.

St. Louis, Mo.—Retail coal dealers having private tracks have organized the Coal Service Bureau, with Edward Devoy as president, to co-operate with the fuel administration. Walter H. Heinecke, Oscar Stephan and John J. O'Connell compose a committee to represent all the dealers. The executive committee is composed of J. C. Blythe, J. Weinberg, H. S. Graves, O. Diefenbach, L. P. Coon, W. G. Hegwein, Paul Mueller and P. E. Conrades.

St. Louis, Mo.—Loaded coal cars sent northward from the southern Illinois field are being utilized for the transportation of automobiles on the return trip. Recently a shipment of 187 machines was made from

Flint, Mich., to St. Louis in 69 gondolas. Special permission was obtained from the transportation commission, with the understanding that the cars would be immediately unloaded when they reached St. Louis and sent on to the coal field.

Marion, Ohio—A meeting of the Ohio Coal Stripping Association was held at this city last week with quite a good attendance. All of the stripping operations in eastern Ohio were represented. The members discussed the peculiar problems which are met in that style of mining. Officers are: W. J. Sampson, Youngstown, president; George A. Blackford, Wheeling, vice president; B. A. Elkins, Bellaire, secretary, and Douglas Vass, Wheeling, treasurer.

Springfield, Ill.—John E. Williams, Illinois fuel administrator, in a bulletin of instructions to fuel committees, informs them that coal will not be shipped into any community unless it is shown that there is a shortage in the entire community and it is not possible to substitute wood or other for fuel. He warns the committees that very little can be done in behalf of any community until the local committee has done it full duty according to the instructions given.

St. Louis, Mo.—Under the classification made by the Missouri fuel administration, it will not be possible for Duquoin coal to be sold as Carterville coal, as has sometimes been done in the past. Hereafter Duquoin coal will have to be designated as such by stamping the bill. After the classification was made there was some objection by dealers, but after E. J. Wallace, adviser of the St. Louis fuel committee, had explained the advantage of the classification, it was permitted to stand.

Charleston, W. Va.—Eleven river steamboats, towing 123 barges and 31 flatboats, which carry a total of 1,754,000 bu. of coal from the Kanawha field, are on their way down the Ohio River to Southern markets, the United States Engineers' office here announced. The navigable stage, the statement said, was made possible by the most successful "artificial wave" the engineers have yet created, the dammed-up waters of the Kanawha as well as those of the Upper Ohio being utilized.

Jefferson City, Mo.—Having been acquitted of the charge of attempting to collect from the state payment for 22 tons of coal that was not delivered, John W. Riner, coal dealer, is making an effort to collect the \$4.75 per ton to which he contends he is entitled. He has made demand upon State Auditor Hackman for payment. Hackman says he cannot pay the bill until it is approved by the Board of Permanent Seal of Government. Riner says if it is not paid he will mandamus Hackman.

St. Louis, Mo.—Walter A. Zelnicker Supply Co. announces that it has acquired the services of L. B. Moses, who has been closely associated with the rail trade since 1903, when he left the position of assistant to the president of the Kansas City Southern Ry. Since 1911 Mr. Moses has been sales manager of the Kettle River Co., of Minneapolis, and he joins the Zelnicker organization as second vice president, in charge of rail department, with headquarters at the company's main offices in St. Louis.

Columbus, Ohio—The Ohio fuel administration was overwhelmed with requests for coal during the latter part of the week when the blizzard arrived. Reports received by the administration indicated a better condition in the Cincinnati gateway. The Toledo gateway is also in fair shape considering the congestion on all railroads. The situation in Columbus, according to the fuel administration, is fairly good. But with heavy snow and attending lower temperatures the railroads are not expected to hold up in good service.

Toledo, Ohio—Despite the fact that the Lake priority order has been lifted, there was considerable activity at the Toledo docks of the Hocking Valley and Toledo & Ohio Central railroads during the week ending Dec. 7. For the week, the Hocking Valley docks loaded 137,000 tons as compared with 122,000 tons the previous week. The total handled since the opening of navigation is 4,788,936 tons. The Toledo & Ohio Central loaded 52,000 tons as compared with 64,000 tons the previous week. The total loaded for the season is 2,343,782 tons.

Columbus, Ohio—Six railroad men in the Columbus district have been named members of a subcommittee of the general operating committee named by the National Defense Council. The Columbus subcommittee is one of 12 similar committees named in an effort to help the transportation situation. Those who are on the Columbus subcommittee are: H. E.

Speale, Toledo & Ohio Central Railroad Co.; B. F. Stevens, Baltimore & Ohio Railroad Co.; J. T. Cary, Norfolk & Western Railroad Co.; W. G. Bailey, Big Four.

Columbus, Ohio—General Freight Agent Manager Wasson, of the Hocking Valley Railroad Co., in a recent report shows the great progress in mining operations on that line during the past two years or less. In January, 1916, the company was supplying 85 mines with cars. By January, 1917, the number had been increased to 115 and by November, 1917, there was a still further increase to 185 operations. Applications for switches and spurs have been filed by the score and the company has been hard at work to keep up with the applications.

St. Louis, Mo.—It is said that no schools in Missouri need fear being closed during the months of January and February on account of a lack of coal, unless there has been a direct lack of foresight on the part of the directors. There is coal enough for all schools in the state. It is probable that the fuel commission of the state will see that all citizens have a limited amount of coal, but will allow no deliveries where more than thirty days' supply is on hand. No orders will be filled where parties have 10 days' supply until all other orders have been filled.

Springfield, Ill.—An unusual case is on trial in the Circuit Court. It is that of Charles J. LeMasters, a miner, against the Chicago-Springfield Coal Co., in which LeMasters seeks \$50,000 for a broken neck. He was injured last March in the Devereaux mine. He alleges his neck was broken by a fall of slate and expects to prove it by doctors and X-ray pictures. He had to lie in one position 14 days while the fracture was knitting. He can walk about now but must look straight ahead. Negligence of the company is alleged in allowing a rotten cap on a prop to remain unrepaired.

Lexington, Ky.—At a sitting here of the Kentucky Railroad Commission the complaint of the Board of Commerce against the Louisville & Nashville railroad on the freight rates on coal to Lexington from points out in the state was heard. Evidence submitted showing that Lexington is assessed more than Louisville, Covington and other towns further from points of origin. The decision is expected before the first of the year. A sitting of the commission will be held at Louisville on Dec. 18 to hear similar complaints from Richmond and Nicholasville, Ky., also against the Louisville & Nashville.

St. Louis, Mo.—Retail coal dealers in St. Louis with tracking facilities have perfected an organization at the request of the St. Louis Fuel Committee, of which E. D. Nims is the chairman. The organization will be officially known as the Coal Service Bureau of St. Louis. Edward Devoy was elected president and a trained man will be selected for the salaried position of secretary-treasurer. J. C. Blythe, J. Weinberg, H. S. Graves and O. Diefenbach were named members of the executive committee for six months, and L. P. Cole, W. J. Hegewin, Paul Mueller and P. E. Conradus for twelve months.

Columbus, Ohio—Even municipalities which have adopted home-rule charters have no legal authority to establish municipal coal yards, except during periods of emergency, and in cities and villages which have not adopted home rule, charters have not the special police power enabling them to establish coal yards. The only power the noncharter towns possess is to relieve the poor under the authority of the state law. These conclusions are those of Attorney General Joseph McGhee in an opinion of the State Bureau of Accounting. The ruling was called forth by scores of requests from the solicitors of municipalities in Ohio.

Louisville, Ky.—Western Kentucky coal operators at a conference held in Louisville with Wiley B. Bryan, Fuel Administrator for Kentucky, unanimously promised co-operation in supplying communities of Kentucky when they are short of coal. They tendered the fuel administrator the use of the bureau of their organization for distribution of emergency orders and promised co-operation to the full. At the same time the operators reported to the fuel administrator that they are being severely handicapped by the shortage of cars and urged his good offices in getting more cars with which to help them make shipments. One operator reported that he had been given only 27 cars in the week and that he would have been able to load 102 if they had been furnished. They stated that heavy passenger traffic on the railroad lines was slowing up coal car movement because of the necessity of frequently taking to sidings to let the passengers pass.

Columbus, Ohio—M. J. Caples, vice-president of the Hocking Valley Railway Co., suggests a constructive program for the relief of the congested traffic condition in Ohio and throughout the country. First, he states that there is no demoralization existing on the railroads of this state. On the contrary, he declares that the railroads are handling more business than ever before in their history. For the greatly increased transportation business which the war has created, he says the railroads need, in the order named, additional terminals, main line tracks, motive power, men and freight cars. As these cannot be supplied to meet the present emergency he makes the following suggestions: Radical reduction in the number of passenger trains, to the possible extent of allowing no one to travel without a permit showing real need. Reduction of number and speed of trains carrying United States mail, so that they will not interfere with the movement of freight and cutting down the number of local freight trains.

New York, N. Y.—The Wholesale Coal Trade Association, of 1 Broadway, announces, through its secretary, Charles S. Allen, that a committee has been appointed, consisting of coal operators and distributors, for the purpose of co-operating with Albert H. Wiggin, the State Fuel Administrator, placing at his disposal the services of men experienced in the production and distribution of coal, with a view to, in every way possible, relieving the coal situation. The committee consists of J. B. Dickson, of Dickson & Eddy, 17 Battery Place; Gardner Pattison, of Pattison & Bowns, 1 Broadway; W. R. Coyle, vice president and general manager of Weston Dodson Co., Bethlehem, Penn., and 17 Battery Place; J. W. Searles, Deputy Commissioner, Tidewater Coal Exchange, which is the pool for bituminous coal at Tidewater, whose office is in the Singer Building; W. S. Alden, president, Alden Coal Mining Co., 1 Broadway, and James A. Hill, president of The Wholesale Coal Trade Association and of the Knickerbocker Fuel Co., 1 Broadway.

Columbus, Ohio—The Columbus Coal Shippers' Terminal Pool Association, formed several weeks ago, met Dec. 8 for the purpose of defining the various classifications of coal which will come into the pool. After considerable discussion it was agreed to have but three grades or preparations—lump, mine-run and screenings. All lump is screened over a 11-in. screen.

The various classifications fixed, to be approved by the general executive and advisory committee of the central organization are: (1) Coal produced in the Hocking Valley, Pomeroy Bend, Crooksville, and from seam No. 4 of the Jackson districts. (2) Coal produced from eastern Ohio and Cambridge fields. (3) Coal from No. 2 seam of the Jackson field. (4) Coal from the Pocahontas and New River districts of West Virginia. (5) Steam coal from districts contiguous to the Norfolk & Western and Cambridge & Ohio railroads. (6) Gas or byproduct coals produced from districts contiguous to the Norfolk and Western and Cambridge & Ohio railroads in West Virginia. (7) Coal from all wagon mines, all of which is mine-run.

St. Louis, Mo.—Two conferences held during the past week by Fuel Administrator Crossley of Missouri and Fuel Administrator Williams of Illinois and the St. Louis Fuel Committee with coal men and railroad men resulted in the issuance of an order by the two administrators limiting the reconsignment privilege and putting a stop to seizure by railroads except on the authorization of the Fuel Administration. At the hearings the coal men attributed car shortage to railroad inefficiency. The railroad men attributed it to delays in reconsignment. The new reconsignment order is as follows: "The right to reconsign coal to a terminal point, except as follows, is hereby prohibited. Shipments of coal may be made to a terminal point consigned to an indefinite destination or to the consignor himself, provided that while the coal is still rolling and before the coal reaches the terminal point, specific destination via an open route be placed in the hands of the proper officials of the railroad company, so that the car may be diverted to the necessary connections without holding it for definite instructions. Furthermore, only one such reconsignment shall be allowed any such car of coal in transit from mine to destination." Coal shipped in violation of the order will be subject to diversion by the joint action of the Missouri and Illinois fuel administrations. Administrator Crossley will endeavor to have the Kansas Administrator join in the reconsignment order. Operators will derive advantage from the order in that they will save demurrage charges when cars are diverted by reason of delay in reconsignment.

Market Department

GENERAL REVIEW

Sudden, severe cold accompanied by heavy snow demoralizes traffic and intensifies demand. Conditions at first appearing extremely serious are later found to be less grave than was at first feared.

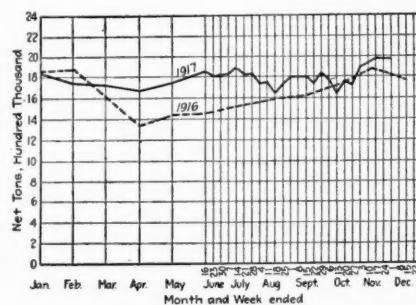
The sudden and unexpected advent of intense cold, ranging in some localities well below zero, accompanied by a storm which in some of the central states approximated a blizzard, played havoc with the coal market. Everywhere freight movement, as well as that of passengers, has been seriously interfered with, and the production and distribution of coal was necessarily slow. The storm tended to augment the adverse effects of congestion and car shortage which were already in strong evidence. Suffering in some localities was intense, particularly in the poor and densely populated districts of some of the larger cities; rural districts also in many instances strongly felt the pinch of scarcity. In New York, for instance, long "coal lines" have besieged retail coal yards, and in isolated cases incipient riots have occurred when the waiters were informed that no coal was to be had. Some dealers went so far as to put men with brooms into their bins to sweep up the last particles of fuel. On the other hand, the country seems to have been quick to rally from the shock of the severe cold and conditions resulting from the great storm have proved to be much better than were at first expected. The movement of coal prior to Friday and Saturday, Dec. 7 and 8, appears to have been better than for some weeks previously, and many localities had succeeded in accumulating a small reserve stock. This was, of course, immediately drawn upon in response to the almost frantic domestic demand accompanying the drop in temperature. In such places the problem became merely one of local distribution. In these localities the bins of the distributors while by no means full, are still not empty. The rail movement furthermore, in many instances, while being far from satisfactory, is conceded to be fully as good as can be expected. There can, of course, even in these districts, be little choice as to the kind and grade of coal purchased, but fuel of some sort is at least purchasable. The local coal committees of various cities and the coal administrators of several states have and are doing much to relieve cases of actual suffering. The steam demand is as insistent as ever, but the country is gradually adjusting itself to the business of war, and preference is always given to those industries and consumers whose efforts or product are essential to the nation's business. Thus, unessential industries are indeed beginning to have "hard sledding." So far as metallurgical fuel is concerned, the present severe weather appears to have had little actual adverse effect. While some blast furnaces have been banked recently, due to the scarcity of fuel, others have been opened. Consequently the net result, that is the total number of stacks banked, in comparison with the total number in the industry, shows a less ratio than a week or two ago. It is reported also that, some manufacturing establishments have had to close down for a week or two in order to accumulate fuel stock. On the other hand, certain others which have been closed have resumed operations. The efforts of fuel-distribution officials and committees of various municipalities are beginning to show beneficial results, not only in relieving actual suffering among small consumers, but in keeping manufacturing plants open. It is proposed to relieve the scarcity of industrial coals in Michigan by means of two pools, one operating in the producing district, the other at the point of distribution.

Lake Trade—There is still some movement of coal by Lake, but shipments from the mines to Lake ports have ceased. The total movement of fuel by Lake has been greater this year than was thought necessary in July and August.

A Year Ago—Anthracite trade well prepared for the cold weather. Average bituminous quotations, falling off sharply and Pittsburgh district prices also declining further, though still at abnormal levels. Domestic grades weak in the Middle West, but steam coal steady.

COAL PRODUCTION

The observance of Thanksgiving Day as a holiday in some districts and not in others casts uncertainty upon the average daily production during the week ended Dec. 1. The total production of bituminous coal (including coal coked) was 10,273,014 net tons, a decrease of 10.8 per cent. as com-



pared with the production of the preceding week. Counting Thanksgiving as half a working day, the average daily production would be almost exactly equal to that during the preceding week.

The production of beehive coke is estimated as 585,773 net tons, compared with 641,923 tons during the preceding week, a decrease of 8.8 per cent. Shipments of anthracite as reported by the nine principal carriers also fell off, declining from 42,936 to 37,533 cars, a decrease of 12.8 per cent.

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS WEEK ENDED:

District Nov. 10 Nov. 17 Nov. 24 Dec. 1

Bituminous shipments, 114 roads. 199,205 201,787 199,385* 182,387† Anthracite shipments, 9 roads. 40,459 42,024 42,936* 37,533† Beehive coke shipments, 4 roads. 11,799 12,784 13,178* 12,025†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

The Iron Age—The Washington conference between the Government and steel makers and the more serious turn in the railroad situation due to snow and zero weather, have largely occupied the iron and steel trades and business has been secondary. With no authority which can give assurance of stable prices, consumers are cautious in buying. This is true particularly in lines of product in which Government wants are not dominating. As to plates, shapes, bars and forging steel the average buyer appreciates that contract deliveries are entirely subject to war priorities.

Bradstreets—Government requisitions and expenditures for all sorts of military supplies are at an unprecedented height, transportation routes are under unexampled strain, and increasing stress is being laid upon the necessity for curtailing non-essential industries to allow of full supplies of fuel and raw materials for war purposes. There is, therefore, increasing evidence of speeding up on the so-called war lines, accompanied by the presence of a governmental check upon activities in others. Incidentally, scarcity of fuel or raw materials or the working out of processes making for closer readjustments to a war basis tend to restrict movements in various ways.

Dry Goods Economist—The most important event of the week, so far as the producer of foodstuffs is concerned, was the action of the Chicago Board of Trade in regulating the course of prices and speculation, which took effect on Wednesday. The reports of Federal Reserve Banks show that the volume of business done within the past week or so has been unparalleled. These reports also indicate continued prosperity on a like scale.

American Wool and Cotton Reporter—The Boston wool market remains fully as quiet as it was a week ago. It is fully as

strong, but appears less likely to advance than it did some time ago. The market seems to be waiting developments since the resignation of the committee on wool supply of the Council of National Defense. The biggest volume of sales seems to be in territory wool. Cotton mills seem to be getting used to paying high prices for their cotton. When they have orders they make their purchases whatever the price. It is felt that cotton will be scarce during the coming spring and summer.

Marshall Field & Co.—The current wholesale distribution of dry goods for the week is ahead of the heavy volume of the corresponding period a year ago. The volume of road sales for both immediate and future delivery is considerably larger than in the same week of 1916. Customers have been into market in greater numbers. The market on domestic cotton continues strong. Collections are good.

Atlantic Seaboard

BOSTON

Congestion grows rapidly worse, both all-rail and at Tidewater loading ports. Shipping Board takes over bunkering at Hampton Roads. Manufacturing plants begin shutting down. Steam-users most anxious over outlook. Fuel Administration directs certain operators to ship certain utilities, apparently regardless of contract obligations. Bad weather interferes with anthracite receipts.

Bituminous—In the main, the situation is progressively worse. On every hand are buyers in serious straits for fuel, eager to pay any price asked if they can but get deliveries and practically no shippers in position to serve them because the present Government price is virtually an embargo against shipments. New England consumers have learned the lesson of past years sufficiently to be reasonably forehanded as to storage, and were it not for these precautions there would have been a coal famine in this territory long before this. As it is, the fuel demand is rapidly nearing the acute stage and there is no telling what will be the outcome.

Both all-rail and at Tidewater the recent storms have had their effect upon movement. When at the loading piers this is added to the complications there existing the dispatch is almost certain to grow worse as the month advances. We are having sustained cold weather to such an extent that it would seem radical measures are imperative to relieve the outstanding emergency cases. The transfer points for rail deliveries are blocked with traffic and the number of priority instructions now in effect on different commodities seem to neutralize one another. Motive power is far short of needs, and the slow filtering through of coal shipments is, at least, alarming. New England roads seem to be jealous enough of their equipment to serve adequately the coal that goes through the various re-handling plants, but doubtless the favorable car-supply here is due chiefly to lighter receipts of water-borne coal.

The coastwise trade has had another hard blow in the storm of Dec. 8. At this writing, the report is that at least a dozen barges were lost en route from Hampton Roads and this means the cargoes were lost with them. Barges owned by the Northern Transportation Co. and the Pocahontas Navigation Co. are known to have been lost. Some of these cargoes were for re-handling plants, as at New Bedford, Mass., where a large number of relatively small consumers were depending upon this coal for current supply the second half of December. This only adds to the distress that is sure to overtake whole sections of this territory before many weeks.

Loading dispatch at Hampton Roads is now something like a week under most favorable auspices. Steamers in several cases are thereby reduced 50 per cent. in efficiency, since it is taking regularly twice as long to make a round-trip to Boston or Portland. The effect is seen in the narrow margins of supply with most of the re-handling factors. One of these in Portland has less than 500 tons on hand and no cargo en route. Such plants have been the main dependence of the New Eng-

land Fuel Administration in trying to work out emergency shipments, but all hands are obliged to draw in and conserve their limited stocks for cases of pronounced distress. Prices f.o.b. Boston that were \$9.24 per gross ton have now been withdrawn, pending further receipts.

The taking over of bunkering arrangements at Norfolk and Newport News by the U. S. Shipping Board is of course designed to expedite loading, but it injects another Governmental authority into the pier situation and is not looked upon with the favor that might be expected. The Navy requirements are large, and all-told the Hampton Roads situation grows more and more complicated.

So far nothing is heard of increased Tide-water shipments for New England as a result of the order issued at Washington a few weeks ago. A comparative statement of Bituminous receipts at the Port of Boston follows:

	11 Mos.	November	Ending Nov. 30
1916	354,886	4,533,981	
1917	306,605	3,929,341	
Deficit	48,281	604,640	

This deficit makes no account of the largely increased use of coal through Government contracts, etc.

Several small plants it is understood have shut down through inability to get coal. It is rumored that one of the largest textile mills will shut down for two weeks for the same reason. There is certainly widespread anxiety throughout New England over possibilities for January.

A few public utilities have secured orders from the Fuel Administration directing certain mines to ship a specified tonnage on a weekly or monthly basis, but in some instances the orders have issued against operations where the car situation is hopeless for territory as far removed as this, unless special railroad instructions follow. Frequently, operators are called upon to fill special orders on a few hours' notice and they are left in a position where they are unable to say what they can do for regular customers to whom they are obligated on contracts.

Anthracite—The storm of a week ago seriously interfered with shipments by water, so that loading at Philadelphia, for instance, has been delayed at least a week. This is just another element in a difficult situation. Many Boston retailers are at their wits ends to arrange deliveries more than a day or two in advance. Some of the largest distributors of bay coal are without supply, and the bitter cold weather has caused many cases of suffering. Rail shipments are spasmodic, and for Tide-water dealers, at least are not to be relied upon. Movement has slowed up a great deal and most shipments are taking a fortnight to come through.

Tonnage figures for the Port of Boston show hard coal receipts for November by water only a few hundred tons less than in November, 1916, although for the eleven months ending Nov. 30 the deficit was nearly 50,000 tons. Such statistics, however, include an anthracite quite a tonnage of steam sizes which has come to this market more plentifully than usual.

Notwithstanding the figures, retail dealers here are declining to take orders except under most restricted conditions. The class hardest hit are the poor who are obliged to buy from hand to mouth.

Local fuel committees are gradually reporting. In Providence, R. I., the price of domestic sizes was reduced 25c. to \$9.75. In Boston it is assumed an advance over the present \$9.50 basis will shortly be granted. The recent wholesale advance of 35c. added to increase barge freights and other charges, including the Government tax, amount to 85c. more than the same coal cost only a little over a month ago. The dealers are rapidly getting to a point where they would be better off to get out of business.

In Salem, Mass., the retailers were permitted an advance of 25c. but no dealer has any coal on his wharf. There are certain to be many cases of distress before December is over.

NEW YORK

Lack of anthracite serious and poor people surround the yards for coal. Delay in transportation due to the storm adds to the situation. Washington authorities appealed to and they promise added supplies. Steam sizes scarce with some sizes not to be had. Bituminous spot coals practically out of the market. Supplies promised manufacturers and many conferences are held.

Anthracite—The lack of supplies and the serious condition of this market has been added to by the storm and the intense cold weather. According to those who ought

to know there was about two days' supply of fuel in and about the city and while more supplies had been promised and were expected the storm held up transportation. There were retail yards entirely without any of the domestic sizes, including pea, while in the poorer sections of the city lines of men, women and children were in front of the gates begging for a pail or two of coal to keep from freezing. The Board of Health in a statement regarding the prevalence of a great many cases of pneumonia attributed much of it to the scarcity of fuel.

Receipts are said by the Fuel Administrators to have increased, but even at that they have been so light that days have intervened between shipments to local yards. In the meantime many of the yards have been bare of coal, unless it might be a small quantity of the steam sizes. On Monday it was expected that considerable coal would arrive, but the storm either delayed arrivals at the docks or it was impossible for the tugs to convey the loaded barges to the docks of the yards.

Appeals have been made to the various fuel administrators for help and this has been promised, but so far the dealers have apparently waited in vain. The situation as regards industrial plants is extremely serious especially in Queens Borough where it is stated it may become necessary to close down several places unless fuel is forthcoming at once. The same can be said regarding similar places in other sections of the city and some of the near-by towns and cities where conferences have been held with officials and the dealers as to what can be done.

In this city several conferences have been held between the fuel administrators and trade representatives, and also with city officials and with members of the Public Service Commission looking to a conservation in consumption on the street and elevated car lines. It was stated that it might become necessary to suspend operations in some of the smaller plants and transfer the work to other plants, sending the workmen to them.

The efforts to increase production by asking the mine employees to work on church days have been partly successful.

All of the producers have added the 35c. increase on domestic sizes including pea coal, to cover the wage increase.

There is a scarcity of the hard steam sizes and some middlemen say they have none to offer.

Current quotations, per gross tons, f.o.b., Tide-water, at the lower ports are as follows:

	Circular	Individual
Broken	\$6.30	\$7.05
Egg	6.20	6.95
Stove	6.45	7.20
Chestnut	6.55	7.30
Pea	5.05	5.80
Buck	3.95@4.65	5.75@6.00
Rice	3.40@3.61	4.50@4.75
Barley	2.90@3.15	3.00@3.20
Boiler	3.15@3.40	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Operators generally, are interested in the decision of the U. S. Supreme Court on Monday declaring the right of employers to prevent labor unions from soliciting non-union employees to join labor organizations. The decision may prove of much importance to those producers whose employees are non-union men.

The proposals of the Government to pool cars and rush shipments has not produced any decided result in this market. Coal is scarce and the demand seems to be on the increase. The docks have no large tonnages, although every shipper is now a member of the Tide-water Exchange. At one of the docks it was said early this week there were 17 boats waiting to be loaded from one pool in which there was only about 1600 tons of coal.

The reports from Washington that the price of bunker coal and coal for shipment to South American and European countries might be increased are encouraging to exporters. At present shipping is considerably delayed from this port because of the scarcity of free coals and many vessels leave for Southern ports to receive fuel for their bunkers, and then proceed on their journey.

Shippers are beginning to consider the contract situation, although few contracts expire between now and Apr. 1. No one seems willing to predict what action might be taken regarding new contracts.

Efforts are being made to secure heavier receipts and Washington is being appealed to almost daily. Many plants, using bituminous, are operating with less than a day's supply ahead, not knowing when the next shipment will arrive.

Car supply continues to be bad notwithstanding priority orders and the like. The mines along the Pennsylvania are receiving about 20 per cent. of the normal number of cars while those along the New York Central get about 50 per cent. Manufacturers in the metropolitan district have been promised relief, it being reported that several thousand tons of coal are being rushed here. Some delay was expected, however, owing to the severe storm which crippled the railroads in central Pennsylvania more than those in the East.

There is a good demand for smelting coal which is being quoted at from \$4.50 to \$5.25 f.o.b.

PHILADELPHIA

Anthracite—With increased shipments the situation is showing considerable improvement. This is not evidenced, however, by increased stocks in the dealers' yards, but thousands of tons have been delivered to householders who have been worrying the dealers. Many dealers have been compelled to hire extra equipment to make deliveries. Few dealers will actually admit they are in better shape, but frequent visits to the various retail yards confirm the fact that orders are again being booked.

Yet there still seems to be some dealers who while they are receiving good stocks of coal have far from caught up on their orders and in one or two instances have put notices in their office windows that they have no coal for sale. It is still the peddler or bucket business that is suffering most, as few dealers have any surplus coal that they can sell to this class of trade. The demand from these small purchasers was particularly insistent this week. Several yards in the poorer sections remained open over Sunday in order to help relieve the situation as far as within their ability.

That the general situation is now fairly satisfactory was confirmed by an interview with Chairman Lewis of the Federal Fuel Committee, in which he said the acute shortage of anthracite in this city is passing and if the public will practice economy it can go through the winter without shivering.

All the companies have at last come out with the new anthracite prices with the 35c. additional granted by the Government and while the individual operators lost no time in boosting their prices, there seemed to be a hitch on the part of the companies, as their circulars were not issued until late in the week. However, several of the larger companies while slow to print their prices, quoted the new figures to inquirers.

All the companies have advanced such free coal as they may have to offer of the steam sizes at the increase of 35c. The contracts on steam sizes have also been advanced to the same extent, although the President's order prevented an increase on the sizes larger than buckwheat that might be under contract. Practically the only size under contract is pea coal, of which the larger companies obligated themselves for large tonnages in the early spring at a figure around \$3.50, which was considered a specially good price at that time, but loses much of its advantage in the face of the new circular price of \$3.75 now in effect.

Some criticism of the new schedule of prices has been voiced by the retail interests. They say this schedule is unfair and misleading with a tendency to make the consumers believe they are being overcharged. Retailers are paying premiums of 75c. to 95c. a ton to obtain coal from independent operators. The company figures have been announced in a manner to cause misunderstanding at a time when they are endeavoring to have the Fuel Administration recommend a gross margin of \$2.50 above the delivered price to them, a decision on which is expected shortly. There is no complaint by the dealers direct to the independent operators at the ruling allowing them higher prices, but they are anxious to be put in no false light with the public.

Criticism is also heard of the immense tonnage of bank coal sent into the market. The claim is made that while this fuel is inferior to fresh-mined coal, it is bringing circular prices and even shares in the latest advance of 35c.

This week the dealers were notified by the coal committee that they would have to supply themselves with the white card applications used in ordering, as the committee has no funds to cover this expense. At the same time the retailers had im-

ressed upon them the importance of compelling every customer to sign one of these cards. It was stated that certain dealers were ignoring the cards; in fact some of them had not used them at all. The system of giving coal out in emergency cases on personal application of a physician is now working well. Under the old plan some doctors had issued orders on the payment of a fee of \$2.

The retail trade refused to become excited over a rumor that the National Fuel Administration purposed placing all retailers under license as an effective method of checking extortion. Competition has been so keen in the past that few retailers have made a fair return on their investments. In recent months with greatly increased expenses and no regular supplies there are many who would gladly sell out or have the authorities take over their business with a guarantee of a 6 per cent. return.

This week the effort of the city government to obtain prices for coal upon the basis of a yearly contract was not very successful. The dealers were wary in view of the uncertainty in the market. The city did not make any award, but it is believed that the bid of \$2.50 to \$2.70 on the steam sizes will be accepted in view of the greatly increased prices of these grades since the issuance of the new Government order.

Conditions in South and West Philadelphia are improving rapidly. For almost a week shipments have been moving without embargo restrictions, and the plan of running entire trains of coal direct from the region destined for certain sections is being tried out apparently with success.

Considerable interest was shown in the prices of the independents, which with one or two exceptions were advanced 35c., making the new rates: Egg, \$5.55; stove, \$5.80; nut, \$5.90, and pea, \$4.50. To these figures 20c. per ton are added when the coal is bought through brokers. One prominent independent shipper has fixed his prices 35c. lower than the above. Heretofore this shipper had only taken advantage of the 75c. differential to the extent of 15c. and now adds the remaining 60c., ignoring the latest Government increase of 35c.

The steam prices have varied but little of late and the average prices are about as follows for free coal: Buckwheat, \$4.15; rice, \$3.35; barley, \$2.35, and culm, \$1.25. The sale of the latter size continues to boom, particularly since there has been quite a little newspaper discussion as to its use combined with bituminous coal.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line Tide	Line Tide
Broken	\$5.90	\$6.05
Buck	\$3.15	\$3.75
Egg	4.80	6.00
Rice	2.65	3.65
Stove	5.05	6.35
Boiler	2.45	3.55
Nut	5.15	6.40
Barley	2.15	2.40
Pea	3.75	4.65

Bituminous—The congestion of the rail lines continues to seriously impede the bituminous production. While the mining interests were somewhat loath to discuss the proposition of Governmental operation of the railroads, yet they seem willing to accept anything that will help to relieve the present situation. Many continue to be in favor of turning the mines over on the basis of a fixed profit, as has often been suggested heretofore.

The car supply recently seems to hover around 20 per cent. with the larger proportion going on railroad and Government orders. This leaves little for contract trade. One prominent operator expressed the opinion that if the car supply could be gotten up to as high as 50 per cent. they would probably be able to fill their contracts and have a little coal left for disposition at the Government price of \$2.45. There can be no denying that the soft coal men are much down in the mouth on account of present conditions and feel that they have almost gone the limit in their endeavors to have a proper light thrown upon their claims for better treatment. Despite the recent wage increase labor is continuing to drift away from the mines and the operators are finding it increasingly difficult to maintain their organizations.

This week the local Fuel Committee began to assert a deeper interest in the soft-coal problem and a number of consumers have called upon the chairman to exert every effort to cause a greater supply of coal to be shipped to this market. It is also stated that plants engaged in the manufacturing of non-essentials are beginning to feel the effects of the coal shortage, as priority is being more and more granted to the plants engaged in Government work. Glass plants in particular in this vicinity are preparing to shut down or to greatly curtail their activities. The intimation from Washington that hereafter the Fuel Administration expects

to supervise all contracts entered into by the operators has caused considerable interest. Especially is this so since it is stated that all contracts must be made at the Government price of \$2.45. As it now stands there seems to be little, if any, advantage in making a contract.

BALTIMORE

Ten-degree weather and short fuel supply made desperate situation. Consumers appeal to fuel administrator. General shortage blamed on railroads.

Bituminous—With 10-deg. weather here part of this week the consumer and the coal man are both skating, in reality and figuratively, on ice—the figurative ice very thin for the consumer. While the supply of soft coal was a little better on certain days, the bitter cold delayed transportation at times and prevented what probably would have been a more decided improvement under quicker hauls to Tide. By rigid economy and the referring of emergency complaints made to the fuel administrator to the jobbers who had a little surplus on hand, the soft coal consumers who were out of fuel were kept going. Some of the jobbers probably shaded a part of their contract deliveries to accomplish this.

The situation, however, is far from comfortable. The opinion of the trade was largely echoed by President J. H. Wheelwright, of the Consolidation Coal Co., who stated that the trouble was with the railroads. Many mines are producing more coal than they can ship, was his statement, and much additional tonnage could be handled if the railroads could supply the cars. The Government regulations have failed to bring relief, and many mines are idle because they can not get transportation. The coal shortage, is not due to mining conditions, but to failure of transportation.

Anthracite—The fuel administration here has been swamped this week with appeals for hard coal from consumers who claim that they have no fuel at all or very little. Such cases were referred to the retailers committee to fill, but many retailers admit that while they are caring for their own customers who are referred back to them, they are unable to care for any outside business. Not a few consumers are therefore without fuel. Small users are finding it difficult to get any coal in many cases. The scarcity in hard coal appears to lie with the failure of transportation also. Hundreds of loaded cars are reported on sidings between this city and the mines. There are also reports of coal routed for this city to relieve the situation which have been diverted under special orders for this or that purpose.

Lake Markets

PITTSBURGH

Cold snap affects traffic less than expected. Season's Lake shipments fair. Pools to relieve Michigan situation. Scarcey any free coal.

The extremely cold snap that descended upon the Ohio Valley last Saturday night, with practically zero temperature over a large area, had its effect in slowing down all railroad movement. On the whole, however, the damage done was not as great as had been expected would result from the first real winter weather. It is asserted in railroad circles that the effect would have been much more severe if the cold snap had come a fortnight earlier, before the General Operating Committee, or pool of the eastern railroads, had begun its work of clearing up the congestion. A material improvement had been effected in the Pittsburgh district, sidings and yards being not nearly so congested. Car supplies thus far this week have been smaller than last week but the decrease is not great.

Total Lake shipments to Dec. 2 are reported at 27,072,290 tons, against the first estimate that 26,000,000 tons would be required, and the second estimate, early in August, that it would be better to move 29,000,000 tons. A little coal has been moved since Dec. 2, but shipments from the mines ceased some time ago.

In order to relieve the coal shortage in Michigan the General Operating Committee decided on Monday of this week to establish primary coal pools at assembly yards near the mines and terminal pools near the great centers of distribution, entrusting the work to F. C. Baird. At the same time resolutions were adopted instructing the railroads to reduce their orders to current requirements, and wherever practicable to draw coal from reserve stocks until the present situation is relieved.

Some plants in the iron and steel industry are still short of coal, but in general the industry is being fairly well served. The byproduct coking plants are operating almost at capacity.

There is scarcely any free coal being offered. The market remains at the Government prices, \$2.20 for slack, \$2.45 for mine-run and \$2.70 for screened, per net ton at mine, Pittsburgh district, with 15c. permissible to be added in the case of sales made by brokers.

BUFFALO

Rather more bituminous moving till the great storm shut the roads off. Much delay certain now. Anthracite suddenly shut off from the Lakes by the storm. Conditions bad all around.

Bituminous—The whole carrying trade has suddenly been demoralized by a snow storm the worst, probably, to occur before Dec. 10 in the history of business. It is too early yet to obtain facts in regard to it which will show the extent of the trouble, but it is just what the coal trade feared, though nobody imagined that such a storm was possible before January. The stoppage of traffic created a terrible condition in the coal business, bad shape as it was in before the storm.

Prior to the storm the movement was improving somewhat. Jobbers who had not for months been able to get any coal on orders were beginning to obtain a little and some of them boasted that they were again doing business enough on the 15c. margin to pay office expenses. Now this is all changed. The business will have to stop and factories will have to shut down till the roads can move fuel. The situation now is the worst it has been yet and will be still worse if the weather continues cold. With all the fall much colder than the average it was supposed that the winter would be mild and probably slow in arriving and an extra effort was made to keep the Lakes open late, so that the much-needed movement of coal and grain could go on till the shortage was met. This is quite out of the question now.

The Government figures are as follows, f.o.b. per net ton at Buffalo:

	Slack	Lump
Pittsburgh	\$3.75	\$4.25
Bessemer	3.70	4.20
Allegheny Valley	3.60	4.10

Jobbers are still asking the fuel administrator to make a direct ruling on smelting coal. It sells mostly at about \$5 net to consumers at the mines, with cannel often at still higher figures.

Anthracite—The situation is contradictory. Owing to the cold weather and snow the demand increases, but the local fuel authorities claim that the number of private consumers with little or no coal is not large and is decreasing. Much impatience is expressed locally for the Lakes to close, so that more anthracite can be sold in the city. It appears now the Lakes have been virtually closed by the snow storm. Complaints of no coal increase, but the shippers declare them not to be reliable. They often find quite a supply of coal in cellars where they send loads to help out the "destitute."

The movement of anthracite by Lake was good last week, the amount loaded being 92,000 net tons to domestic ports only, of which 28,100 tons cleared for Chicago, 24,000 tons to Duluth and Superior, 24,200 tons to Milwaukee and 15,600 tons to Sheboygan. Freight rates have not been regular enough of late to be quotable.

TOLEDO

Zero weather has arrived. Domestic consumers are frantically trying to place orders for fuel for immediate delivery without success. Steam users are also complaining bitterly of the Government's seeming inability to cope with the situation.

The sudden cold weather brought a heavy demand for domestic coal, and as the stocks of the dealers are not heavy, much suffering is expected. Wholesalers in the city were flooded with orders from small-town retailers for rush shipments, which in most cases could not be filled. For the past month it has been the policy of the local dealers to deliver only a small part of the order received from domestic consumers in an effort to conserve the supplies in the city. But since only a small amount of coal is coming into the city weekly, the amount conserved is negligible.

The demand for coal from steam users is coming forward more briskly than ever. Public service concerns here have been supplied by the local committee in emergencies. Quite a number of concerns listed as non-essential industries have been forced to close down for days at a time owing to the lack of fuel. All concerns working on Government contracts and products essen-

tial to the prosecution of the war have been amply provided for as to fuel. Wholesalers and jobbers report the mines with which they are connected are working to capacity and that every effort is being made to produce more coal.

Not many of the Lake shippers are receiving coal in the quantities that featured the past two months. All are trying to move the accumulated stock at this point to the Upper Lakes. It is expected that much more coal will be released to the steam and domestic trade when the mines cease to load cars for Lake shipment.

DETROIT

Large consignment of soft coal is promised Detroit. Anthracite supply is not improved. Snow and low temperature complicate situation.

Bituminous—Assurance has reached Detroit that immediate action is to be taken by the Federal Coal Administration for relieving the scarcity of soft coal. This action takes the form of ordering moved to Detroit all coal in the congested section along the Baltimore & Ohio R.R. It is estimated the consignment may amount to 3000 cars. To guard against delay or diversion of the shipment along the way, the coal, it is said, is not to pass through Toledo but will be routed around that city. It is expected the coal will be divided between Detroit and other points in Michigan in the effort to relieve the shortage of supply that is now a handicap on operation of many industrial plants, a large proportion of which are engaged in the manufacture of munitions of war or other essentials. The stock will include the output of a number of districts, some thin and some thick vein fields. A considerable part will be made up of coal that has been sold by the operators, under contracts made at various prices. In consequence the interests of the operators are to be protected by the arrangement that such coal will be billed to the recipient at the same price that would have been received, had delivery been made to the original buyer. The present supply of domestic sizes of bituminous in Detroit is virtually exhausted. The increase in supply that was expected to develop following withdrawal of the priority rule in favor of Lake shipments has not materialized.

Anthracite—Detroit retailers are practically without anthracite, while shipments arriving in the city are so small that they afford little relief. Near zero temperatures Saturday and Sunday, with a penetrating Northwest wind and snowfall, found many Detroit homes unsupplied with coal. The snow and low temperature, making more difficult the transportation of coal trains contribute to curtailment of supply and at the same time made more necessary the providing of coal for the many families without it.

Lake Trade—Quite a number of coal cargoes were loaded following the termination of the priority order. Lake shipments of the season to Dec. 2, exceeded by more than 1,000,000 tons the estimated requirements of 26,000,000 tons, calculated on in May.

COLUMBUS

Heavy snows and lower temperatures have caused a rush of domestic orders. Producers are importuned to ship at once and the Ohio Fuel Administration is busy investigating cases of need.

The expected cold weather has arrived and with it comes a rush of domestic orders, which producers and jobbers are unable to take care of. Suffering in various communities is reported but the efforts of the local fuel committees are now directed towards relieving such instances and suffering is being held at a minimum. On the whole the great demand for both domestic and steam grades is the principal feature of the trade. This demand is expected to continue throughout the winter.

Retailers in Columbus have been delivering only small lots to consumers in an endeavor to make their available supply go round. Cases of dire need are investigated by the local committee which gives orders for relief if the situation demands. Retail stocks are light and railroads are not handling loaded cars as promptly as formerly. In fact, the heavy fall of snow is causing much trouble in traffic. Wrecks on several of the coal carrying roads have still further complicated matters. Retail prices are firm at the levels fixed by the fuel administration. Consumers are not wrangling over the grade or origin of coal, but are accepting everything that is available.

Steam business is strong and the fuel administration has been freely called upon to get full supplies for power purposes. Under the system inaugurated several weeks ago all schools, hospitals and public institutions have been supplied for the

time being. Power concerns are rather short and but few have any surplus supply to speak of.

The Lake trade is still active, although this is not expected to last. Most of the coal on the way to the lower Lake ports will be loaded before navigation closes.

Production in various Ohio districts has been curtailed by car shortage, due principally to lack of motive power. This is especially true of eastern Ohio and Crooksville districts. In eastern Ohio the output during the week was not more than 25 per cent. of capacity. The Hocking Valley and Pomeroy Bend districts produced about 65 per cent. of capacity.

Prices on short tons f.o.b. mines are as follows:

	Hock- ing	Pom- eroy	Eastern Ohio
Rescreened lump	\$2.70	\$3.05	
Inch and a quarter	2.70	3.05	\$2.70
Three-quarter	2.70	3.05	2.70
Nut	2.70	3.05	2.70
Egg	2.70	3.05	
Mine-run	2.45	2.70	2.45
Nut, pea and slack	2.20	2.45	2.20
Coarse slack	2.20	2.45	2.20

CINCINNATI

Bad traffic conditions were rendered still worse by a heavy snowstorm Saturday. This also increased demand, with only a limited supply of fuel available. The situation is not encouraging.

One of the heaviest snowstorms in several years began Friday night and continued all day Saturday in Cincinnati and the surrounding territory, making train movements difficult and thereby impeding still further the forwarding of badly needed fuel. At the same time, the severe weather naturally resulted in an immediate flood of emergency orders from domestic and other consumers. The trade is doing its best to meet the situation, but with extremely light supplies to distribute and with distribution, both local and general, badly hampered by the heavy snow, the difficulties could not well be greater.

Supplies of coal in the city have had no opportunity to grow lately, as they have at no time been more than a few days ahead of actual consumption or even sufficient to meet orders on hand from consumers, if these orders were filled. Should the snow be as heavy in the mining districts as in the Ohio Valley, as it probably is, grave difficulties in the movement of traffic are certain to result, and it is feared that the resulting fuel shortage may cause suffering as well as serious industrial difficulties. Large shipments of coal are reported on the river, destined for Cincinnati and for the lower river ports, and these may help somewhat, if they arrive.

LOUISVILLE

Heaviest snowfall ever recorded on top of diminishing car supply adds to difficulties of coal production and distribution. Zero weather, clamorous domestic demand and blockaded streets.

Following a week of movement of coal out of the Kentucky fields which had been slowed down because of a car supply that was becoming less and less ample, Kentucky has been visited by the severest snowstorm in the state's history, together with zero temperatures. The first result was blockading of numbers of railroad lines for hours or days and suspension of numbers of industrial plants and utilities which had been operating on hand-to-mouth supplies of coal.

All over the central states there was an immediate demand for coal for domestic uses. The situation in Louisville was typical. With 16 in. of snow before unheard of there was no preparation for coping therewith and traffic was virtually suspended. Dealers in Louisville made every effort to keep their steam customers—factories, hotels, office buildings, etc., supplied—but considered it hopeless to attempt to make usual deliveries as indeed was the case.

The snow is early and will likely go off quickly, with resulting high stages in the rivers and perhaps a movement of coal by those routes. In the mining fields, deep drifts and cold weather mean a severe loss in efficiency and will greatly slow up production and movement of coal. The demand from all sources continues greater than the supply and the trade is exerting every effort to meet at least in part legitimate needs.

BIRMINGHAM

Coal situation unsatisfactory both to the producer and the consumer. Demand for both steam and domestic coal almost frantic from every quarter, the limited supply being applied where the needs are most important and acute. Coal continues to move slowly to the local yards and another cold

spell promises to bring about a serious domestic shortage.

There is a serious shortage of domestic and steam coal throughout territory supplied from the Alabama field, and distributors are kept busy trying to facilitate the movement of coal to their customers and relieving temporarily acute needs here and there as they are brought to their attention. The demand from every quarter has become almost frantic and brokers and sales agents are swamped with telegraphic appeals and letters urging the acceptance of orders and prompt shipment of coal. The local domestic situation threatens to again become acute as a result of the cold weather and the fuel board is bringing pressure to bear on the railroads to make delivery of the several thousands tons of domestic coal now in transit to local dealers, whose supply is scant.

The recent order of the fuel administrator apportioning to the various mines on the Southern railway the tonnage to be supplied to that line weekly—approximately one-third of their respective outputs—has caused protest from many producers—several of whom are now furnishing large quotas of railroad fuel, the balance being consumed in coke production and other uses incident to furnace operations, practically all production of commercial mines going to public utilities and industries essential to the welfare of the country.

It is understood that a number of the smaller independent operators are arranging to take advantage of the 45-cent increase in price recently authorized by the fuel administrator, and are drawing up agreements to be negotiated with individual employees providing for increases in wages and placing the penalty provision in effect.

Coke

CONNELLSVILLE

Cold snap further decreases car supplies. More furnaces banked this week. Doubts as to labor supply. Foundry coke movement light.

Despite the cold snap that came Saturday night, with zero temperatures, car supplies in the Connellsville region have been only slightly reduced from the average of the past three weeks, although those supplies were quite inadequate. At the end of last week the blast furnaces were operating a shade better than at the beginning of the week, a few additional furnaces having had to bank while a larger number resumed after banking. This week the number of furnaces banked has been increasing.

There is room for discussion as to how much more coke the region could produce if it were fully supplied with cars. In some quarters it is claimed there is sufficient labor to produce a much larger tonnage while in other quarters the contention is made that any material increase in the car supply would immediately uncover a labor shortage. It is a fact that some operators who have secured a few extra cars from time to time have had difficulty in securing labor with which to load them from stock piles.

The movement of foundry coke is very light. Box cars are hard to obtain while the railroads, acting under instructions of the Fuel Administration, are giving priority to furnace coke over foundry, when loaded in open-top cars. While many foundries are short of coke, the requirements of the foundry industry as a whole have decidedly decreased in the past few months.

There is little free coke to be picked up in the market, only an insignificant fraction of the amount that would be bought if available at the Government prices, \$6 for furnace and \$7 for 72-hour selected foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Dec. 1 at 295,316 tons, a decrease of 20,701 tons, and shipments at 284,780 tons, a decrease of 27,228 tons.

Buffalo—The trade is quiet, with little demand within the reach of jobbers in coal, as they must sell at the Government prices of \$7.85 for furnace and \$8.85 for foundry, at which they are not able to obtain any supply from the ovens, where it is claimed that existing contracts take the entire output. The price of gas coke by wagon load at the Buffalo lighting companies is \$7.45 per load, at which the demand is many times the supply.

Birmingham—Coke producers in the Birmingham district are experiencing great difficulty now in securing box car equipment for the shipment of their product to customers outside the immediate territory, and are unable to supply consumers with

